Service Manual

ViewSonic VG500b-1

Model No. VLCDS24349-1

15” Digital Controlled Color Monitor

(VG500b-1_SM_574-Rev. 1.0-October 2002)

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Revision History

Revision	Date	Description Of Changes	Approval
1a	10/01/02	Initial Release DCN-2350	K.Yang
1b	10/31/02	Revise DCN-2350	**C.Shen**

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1. PRECAUTION AND NOTICES

SAFETY PRECAUTIONS

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper used or installation may cause damage to the monitor as well as to the user.

WARNINGS:

- This monitor should be operated only at the correct power sources indicated on the label on the rear of the monitor. If you're unsure of the power supply in your residence, consult your local dealer or Power Company.
- Use only the special power adapter that comes with this monitor for power input.
- Do not try to repair the monitor by yourself, as it contains no user-serviceable parts. This monitor should only be repaired by a qualified technician.
- Do not remove the monitor cabinet. There are high-voltage parts inside that may cause electric shock to human bodies.
- Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.
- Put your monitor only in a clean, cool, dry environment. If it gets wet, unplug the power cable immediately and consult your local dealer.
- Always unplug the monitor before cleaning it. Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the glass screen.
- Do not place heavy objects on the monitor or power cord.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety visual inspections and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Before replacing any of these components read the parts list in this manual carefully. The use of substitute replacement parts, which do not have the same safety characteristics as specified in the parts list, may create shock, fire, or other hazards.

SERVICE NOTES

1. When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
2. Keep wires away from high voltage, high temperature components and sharp edges.
3. Keep wires in their original position so as to reduce interference.
4. Adjustment of this product please refer to the user' manual.

2. SERVICE TOOL AND EQUIPMENT REQUIRED

SERVICE TOOLS & EQUIPMENT REQUIRED

1.	SIGNAL GENERATOR:	Chroma 2237 or equivalent
2.	MULTIMETER	Fluke 45 or equivalent
3.	SCREW DRIVER	
4.	OSCILLOSCOPE	Tektronik TDS3054 digital oscilloscope or equivalent
5.	SOLDER IRON	

3. SPECIFICATIONS

SPECIFICATIONS

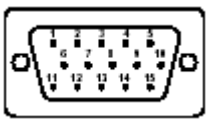
3.1 PRODUCT SPECIFICATIONS

LCD Panel	15.0” TFT
Power Management	ENERGY Star compliant VESA DPMS compatible <2W
Displayable Resolution	XGA, 1024x768 (max.)
Pixel Dimension	0.2907(H) x 0.2907(V) mm
LCD Display Color	16.7M color (max.)
Viewing Angle	CR≥10 Horizontal: -60˚~+60˚ Vertical: -55˚~+45˚
Tilt	-5˚~20˚
Contrast Ratio	400:1 typical 250:1 minimum
Brightness	200cd/m² (min) 250cd/m² (typ.)
Response Time	Tr: 7ms, Tf: 23ms
Active Display Area	304.1mm(H) x 228.1mm(V)
Temperature	Operating: 0˚C~+40˚C Storage: -20˚C~+60˚C
Compliance	UL, CSA, FCC, CE, CB, BSMI, ENERGY Star, TUV, Semko, Nemko, Fimko, Demko, DHHS, MPRII, TCO95, GOST-R, C-Tick, VCCI, CCC, PCT, NOM, PCBC
Power	Input Voltage: 100~240 Vac Consumption: 36 Watts (Max.)

3.2. SUPPORTING MODES

Primary Preset:	VESA 1024 x 768 @ 60Hz
Factory Preset Modes:	1.VGA 640x350 @ 70Hz, 25.176MHz 2.VESA 640x480 @ 60Hz, 25.175MHz 3.MAC 640x480 @ 67Hz, 31.500MHz 4.VESA 640x480 @ 72Hz, 31.50MHz 5.VESA 640x480 @ 75Hz, 31.50MHz 6.VESA 720x400 @ 70Hz, 28.320MHz 7.VESA 800x600 @ 56Hz, 36.00MHz 8.VESA 800x600 @ 60Hz, 40.00MHz 9.VESA 800x600 @ 72Hz, 50.00MHz 10.VESA 800x600 @ 75Hz, 49.5MHz 11.MAC 832x624 @ 75Hz, 57.272MHz 12.VESA 1024x768 @ 60Hz, 65MHz 13.VESA 1024x768 @ 70Hz, 75.000MHz 14.VESA 1024x768 @ 72Hz, 78.000MHz 15.MAC 1024x768 @ 75Hz, 80.000MHz 16.VESA 1024x768 @ 75Hz, 78.750MHz

3.3. D-SUB CONNECTOR PINASSIGNMENT



Pin No.	Symbol	Signal	Description
1	R	RED	0.7vp-p (VIDEO)
2	G	GREEN	0.7vp-p (VIDEO)
3	B	BLUE	0.7vp-p (VIDEO)
4	GND	GROUND	
5	GND	GROUND	
6	GND	GROUND	
7	GND	GROUND	
8	GND	GROUND	
9	VCC_+5V	PC +5V	
10	GND	GROUND	
11	N.C.		
12	DDC_SDA	DDC1/2B	TTL
13	DDC_SCL	DDC1/2B	TTL
14	VGA_VSYNC	VSYNC	TTL positive or negative

15	VGA_HSYNC	HSYNC	TTL positive or negative

3.4 Main DC+12V Input (J800 on I/F Board)

Pin No.	Symbol	Function
1	GND	Ground
2	DC+12V	Main DC+12V Input
3	GND	Ground

3.5 Audio Input Jack (J701 on I/F Board)

Pin No.	Symbol	Function
1		Ground
2		L_CH_Audio Input
3		R_CH_Audio Input
4		L_CH_Audio Return
5		R_CH_Audio Return

4. INTERNAL CONNECTOR PIN ASSIGNMENT

XGA Interface Board (LIF-007)

JP2 (T-S12BZR): Connect with Control board

Pin No.	Symbol	Function
1	Mute	OSD, Audio Mute Function Button
2	SP-	Adjust audio volume smaller
3	SP+	Adjust audio volume louder
4	Menu	Call out or close the OSD menu or come back to the previous menu
5	Down	Choose the next one item or value
6	Up	Choose the last one item or value
7	Sel	Select
8	GND	Ground
9	Amber	Indicate the system in power saving mode
10	Green	Indicate the system in active mode
11	GND	Ground
12	Power	Power on/off control port

CON220 (T-B12B-ZR): Connect to the LOR-002, which is power/audio board

Pin No.	Symbol	Function
1	SENSOR	Detect audio I/P signal
2	GND	Ground
3	+12V	DC+12V
4	GND	Ground
5	CCFL_EN	Backlight lamps ON(high)/Off(Low) control
6	GPIO2/PWM2	Brightness adjustments (Low Max./ Hi. Min.)
7	MUTE+	Audio Must control (High means SPK off, Low means On)
8	GND	Ground
9	+5V	DC+5V
10	+5V	DC+5V
11	STDBY	Audio Stand-by control (Hi means stand-by, Low means Normal)
12	VOLUME	Speaker volume control (0V means Sound off, 1.2V means MAX.)

CN501 (IL-FHR-50S-HF): Output to panel

Pin No.	Symbol	Function
1	GND	Ground
2	GND	Ground
3	CLKH-	Sampling Clock for line pixels
4	GND	Ground
5	GND	Ground
6	OB7	Blue data signal of odd pixel
7	OB6	Blue data signal of odd pixel
8	OB5	Blue data signal of odd pixel
9	OB4	Blue data signal of odd pixel
10	OB3	Blue data signal of odd pixel
11	OB2	Blue data signal of odd pixel
12	OB1	Blue data signal of odd pixel
13	OB0	Blue data signal of odd pixel
14	GND	Ground

15	OG7	Green data signal of odd pixel
16	OG6	Green data signal of odd pixel
17	OG5	Green data signal of odd pixel
18	OG4	Green data signal of odd pixel
19	OG3	Green data signal of odd pixel
20	OG2	Green data signal of odd pixel
21	OG1	Green data signal of odd pixel
22	OG0	Green data signal of odd pixel
23	GND	Grounding
24	OR7	Red data signal of odd pixel
25	OR6	Red data signal of odd pixel
26	OR5	Red data signal of odd pixel
27	OR4	Red data signal of odd pixel
28	OR3	Red data signal of odd pixel
29	OR2	Red data signal of odd pixel
30	OR1	Red data signal of odd pixel
31	OR0	Red data signal of odd pixel
32	GND	Ground
33	GND	Ground
34	VDDA	DC+9V for panel D/A reference voltage to make gray scale smooth
35	VDDA	DC+9V for panel D/A reference voltage to make gray scale smooth
36	VDDA	DC+9V for panel D/A reference voltage to make gray scale smooth
37	VDDA	DC+9V for panel D/A reference voltage to make gray scale smooth
38	VDDA	DC+9V for panel D/A reference voltage to make gray scale smooth
39	VDDA	DC+9V for panel D/A reference voltage to make gray scale smooth
Pin No.	Symbol	Function
40	GND	Ground
41	GND	Ground
42	GND	Ground
43	GND	Ground
44	EPOL	O/E reference voltage selection
45	HMS2_E	Even pixel inverter for power saving and reducing EMI
46	HMS1_O	Odd pixel inverter for power saving and reducing EMI
47	DHS_LP	Latch pulse for per line
48	STH1	Trigger the first pixel per line
49	GND	Ground
50	GND	Ground

CN502 (IL-FHR-50S-HF): Output to panel

Pin No.	Symbol	Function
1	GND	Ground
2	GND	Ground
3	VEEG	DC-6V for frame dark
4	VEEG	DC-6V for frame dark
5	VDDG	DC+18V for frame white
6	VDDG	DC+18V for frame white
7	CLKV	Sampling Clock for frame line
8	STV1	Trigger the first line per frame
9	VDDD	DC_3.3V for panel VCC

10	VDDD	DC_3.3V for panel VCC
11	VDDD	DC_3.3V for panel VCC
12	VDDD	DC_3.3V for panel VCC
13	VDDD	DC_3.3V for panel VCC
14	VDDD	DC_3.3V for panel VCC
15	VCOM	Panel flicker adjustment, Adjustable voltage from DC3.3V ~4V
16	VCOM	Panel flicker adjustment, Adjustable voltage from DC3.3V ~4V
17	VCOM	Panel flicker adjustment, Adjustable voltage from DC3.3V ~4V
18	VCOM	Panel flicker adjustment, Adjustable voltage from DC3.3V ~4V
19	VCOM	Panel flicker adjustment, Adjustable voltage from DC3.3V ~4V
20	VCOM	Panel flicker adjustment, Adjustable voltage from DC3.3V ~4V
21	GND	Ground
22	GND	Ground
23	EB7	Blue data signal of even pixel
24	EB6	Blue data signal of even pixel
25	EB5	Blue data signal of even pixel
26	EB4	Blue data signal of even pixel
Pin No.	Symbol	Function
27	EB3	Blue data signal of even pixel
28	EB2	Blue data signal of even pixel
29	EB1	Blue data signal of even pixel
30	EB0	Blue data signal of even pixel
31	GND	Ground
32	EG7	Green data signal of even pixel
33	EG6	Green data signal of even pixel
34	EG5	Green data signal of even pixel
35	EG4	Green data signal of even pixel
36	EG3	Green data signal of even pixel
37	EG2	Green data signal of even pixel
38	EG1	Green data signal of even pixel
39	EG0	Green data signal of even pixel
40	GND	Ground
41	ER7	Red data signal of even pixel
42	ER6	Red data signal of even pixel
43	ER5	Red data signal of even pixel
44	ER4	Red data signal of even pixel
45	ER3	Red data signal of even pixel
46	ER2	Red data signal of even pixel
47	ER1	Red data signal of even pixel
48	ER0	Red data signal of even pixel
49	GND	Ground
50	GND	Ground

POWER/AUDIO Board (LOR-002)

JP2 (T-B12B-ZR): Connect to the I/F Board

Pin No.	Symbol	Function
1	Volume	Speaker volume control (0V sound off, 1.2V sound Max.)
2	Stdby	Audio standby control (High standby, Low normal)
3	DC+5V	DC+5V
4	DC+5V	DC+5V
5	GND	Ground
6	MUTE+	Audio mute control (Voltage High speaker off, Low speaker on)
7	BRT	Brightness adjustment (Low is max., High is Min.)
8	CCFL_EN	Backlight lamps enable (ON/high, OFF/low)

9	GND	Ground
10	DC+12V	DC+12V
11	GND	Ground
12	SENSOR	Detect audio I/P signal

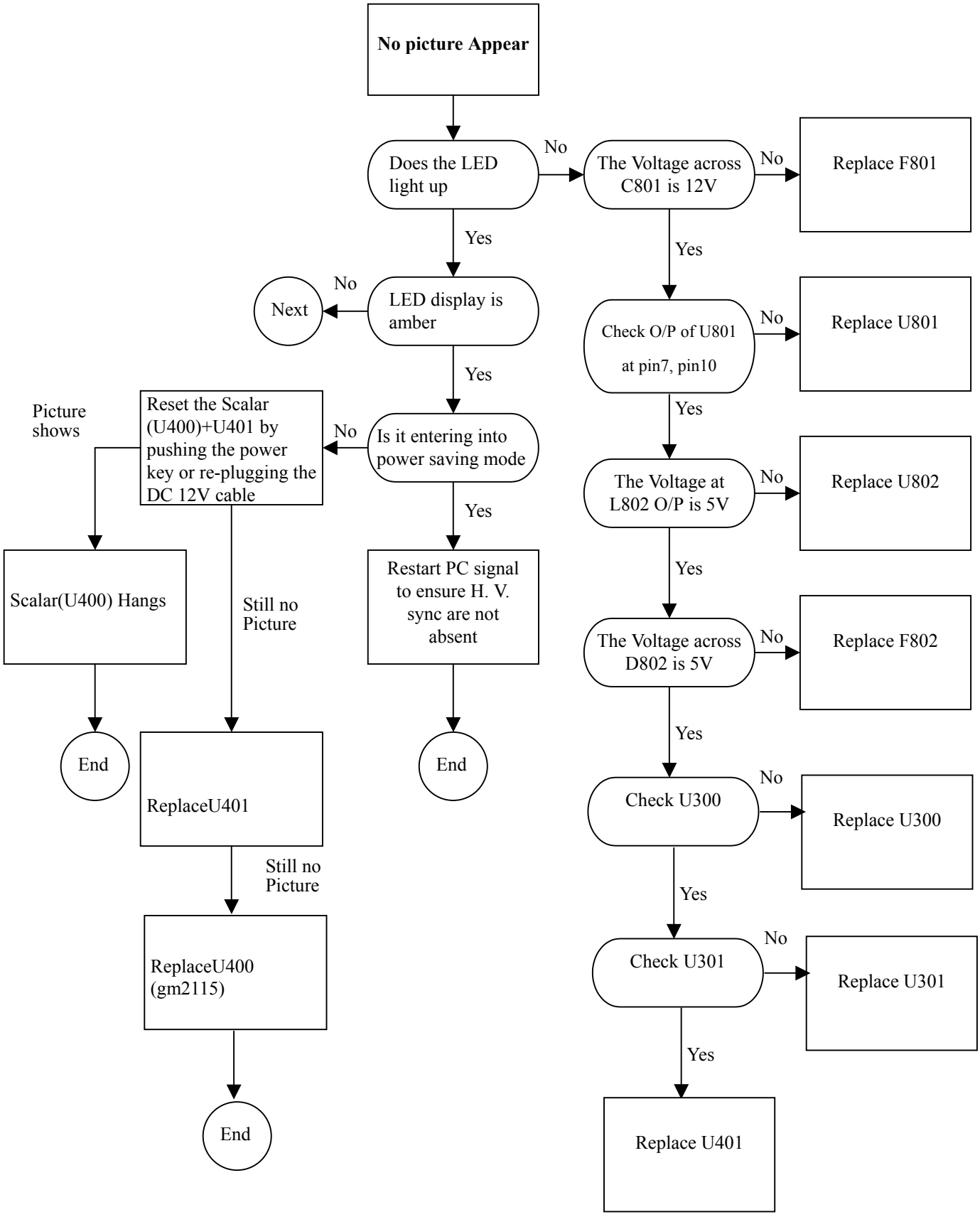
CN830 (S5B-PH-K): Connect to inverter

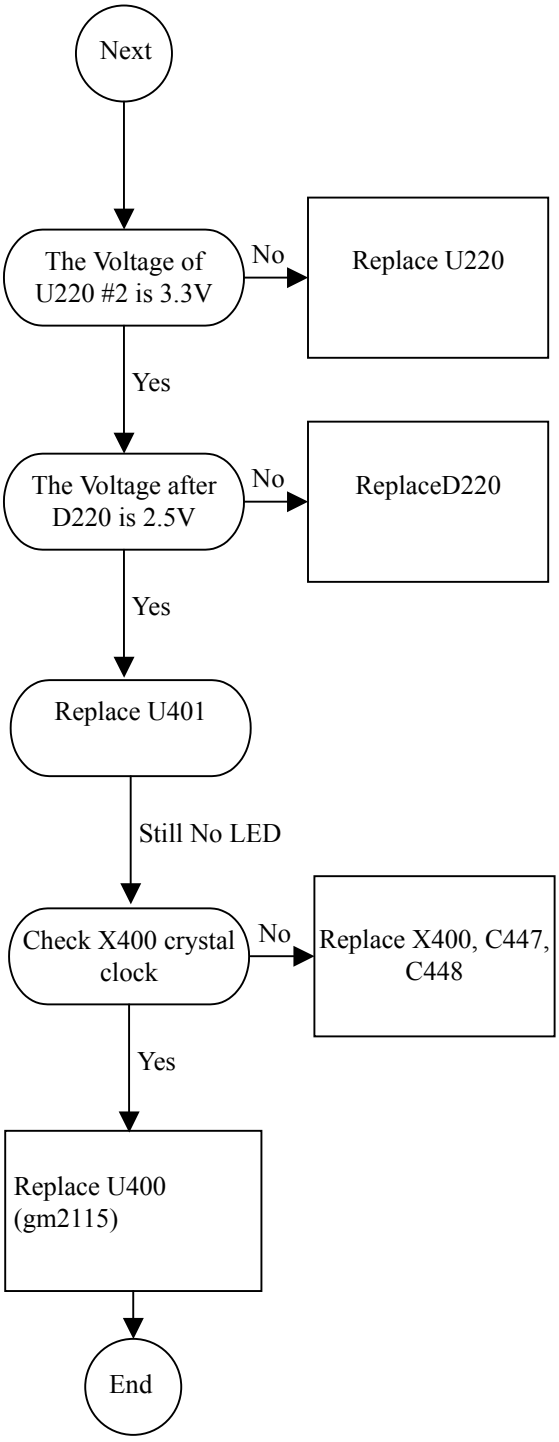
Pin No.	Symbol	Function
1	DC+12V	DC+12V
2	GND	Ground
3	BRT	Brightness adjustment (Low is Max., High is Min.)
4	DC+5V	DC+5V
5	CCFL_EN	Backlight lamps enable (ON/high, OFF/low)

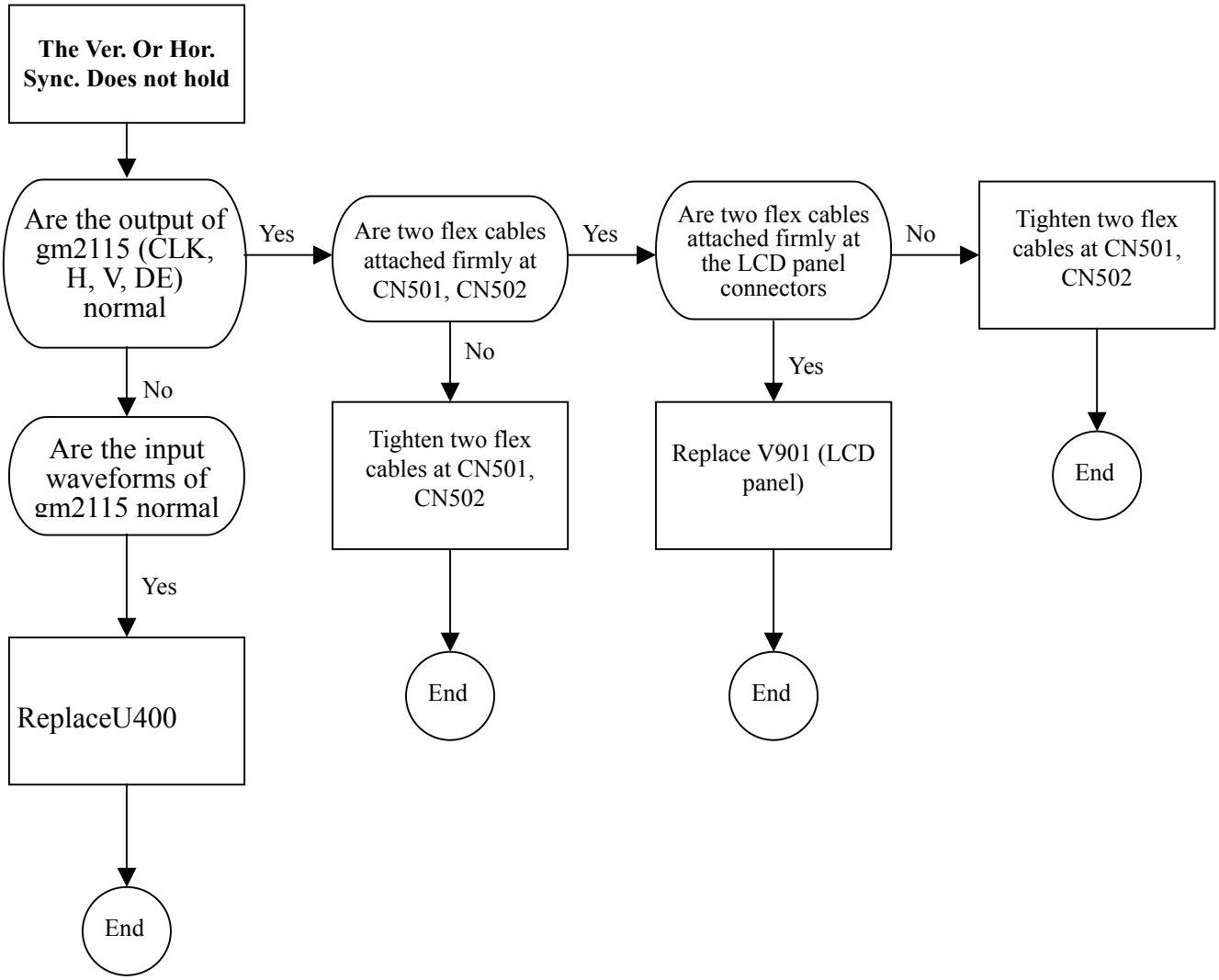
CN701 (S5BPH-K): Connect to control board, control the audio

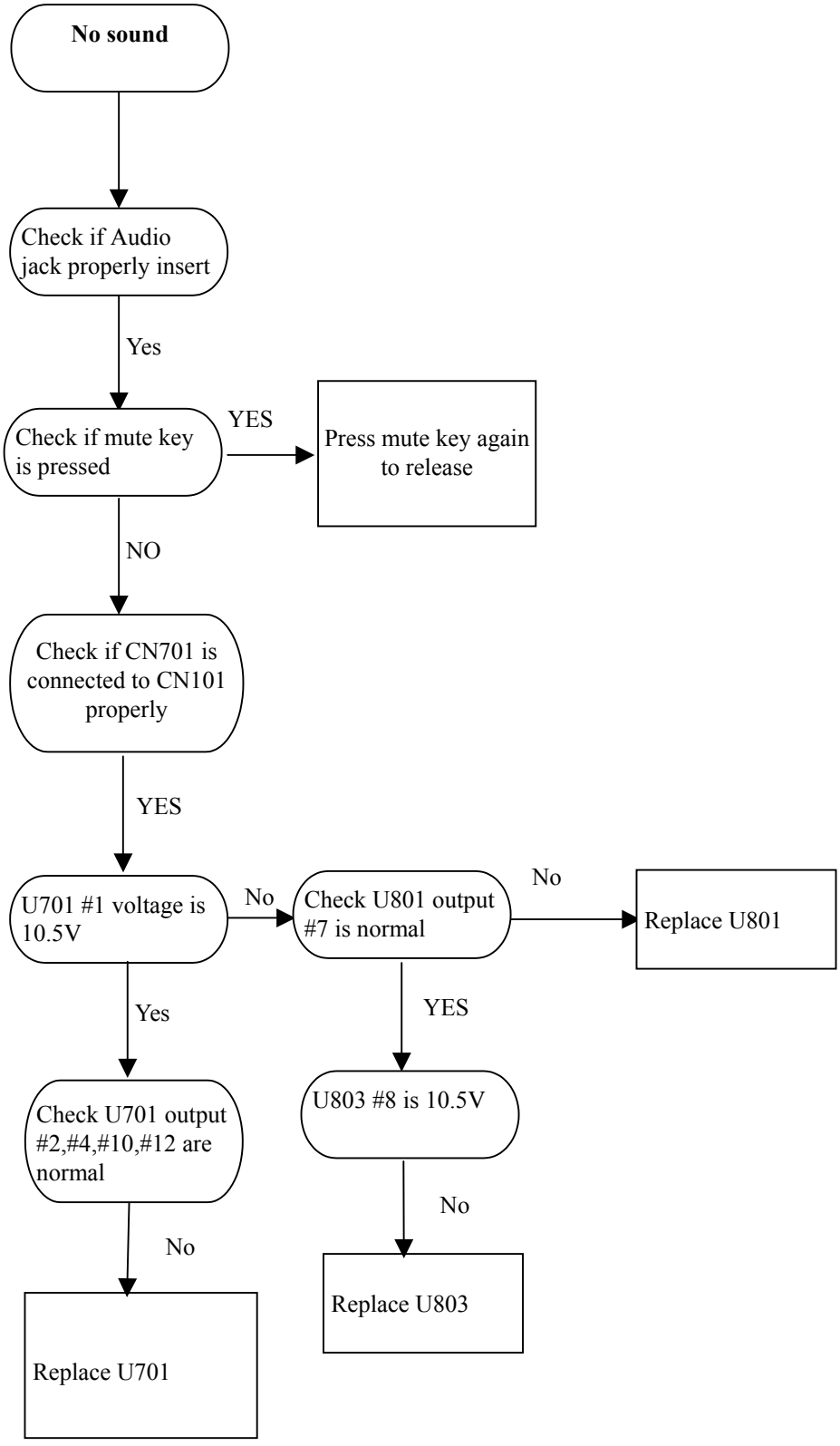
Pin No.	Symbol	Function
1	L-	L_CH_SP_-Signal
2	L+	L_CH_SP_+Signal
3	GND_S1	Ground
4	R+	R_CH_SP_-Signal
5	R-	R_CH_SP_+Signal

5. TROUBLESHOOTING FLOW CHART




Next
The Voltage of U220 #2 is 3.3V
No
Replace U220
Yes
The Voltage after D220 is 2.5V
No
ReplaceD220
Yes
Replace U401
Still No LED
Check X400 crystal clock
No
Replace X400, C447, C448
Yes
Replace U400 (gm2115)
End


The Ver. Or Hor. Sync. Does not hold
Are the output of gm2115 (CLK, H, V, DE) normal
Yes
Are two flex cables attached firmly at CN501, CN502
Yes
Are two flex cables attached firmly at the LCD panel connectors
No
Tighten two flex cables at CN501, CN502
End
No
Are the input waveforms of gm2115 normal
Yes
ReplaceU400
End
No
Tighten two flex cables at CN501, CN502
End
Yes
Replace V901 (LCD panel)
End


No sound
Check if Audio jack properly insert
Yes
Check if mute key is pressed
YES
Press mute key again to release
NO
Check if CN701 is connected to CN101 properly
YES
U701 #1 voltage is 10.5V
No
Check U801 output #7 is normal
No
Replace U801
Yes
YES
Check U701 output #2,#4,#10,#12 are normal
U803 #8 is 10.5V
No
No
Replace U803
Replace U701

6. ADJUSTMENT

Panel adjustment:

1. Select 1024 x 768@60Hz mode, and Crosshatch pattern
2. Press " Auto image set up" -------Direct access "2" Key
3. Brightness set at maximum
4. Switch pattern to full screen "pixel on/off" pattern with R, B color off and Green on. Green color level set at level 255.
5. Adjust VR601 until whole screen display stable and flicker free.

7. THEORY OF OPERATION

8.1 Inverter Board Circuit

The diagram of inverter board circuit is shown in Appendix (PWB-0420_01). The inverter supplies power for backlight for the LCD panel.

8.2 Power supply Board Circuit

Please refer to 2.0 power Schematic sheet in Appendix. The 12Vdc from adaptor output is fed into J800 as power regulation of U801 (BA9741F) input power and inverter main power on pin 1 of CN830. The U801 can provide two independent power sources: a) The 5Vdc will be for main board power. ; b) Another 10.5Vdc will output as audio power when audio Jack is inserted.

8.3 Scaling controller Board Circuit

The Scaling IC U400 is to convert the input signal from VGA, and SVGA to an XGA resolution that the panel can acknowledge.

The scaling IC of gm2115 is a highly integrated System-on-a- Chip with very powerful functions, including integrated 8 bit triple-channel ADC/PLL, programmable OnPanel timing controller, embedded microcontroller with parallel ROM interface, OSD engine, sRGB compliance, and PWM back light intensity control.

The Scaling IC features an integrated timing controller (TCON) that connects directly to commercially available row and column drivers. All TCON signals OCLK, ECK, ORGB, ERGB, OSP, ESP, OPOL, OINV, EINV on pin 119 to pin 128 of U400 have programmable drive strengths and can be disabled to control Panel.

The flash memory chip of U410 contains codes via parallel data bus interface to communicate with Scaling IC U400.

The DDC memory chip of U300 stores DDC data and the NVRAM chip stores timings and setting data. Since the NVRAM has to get series number information from DDC chip, both their SDA and SCL ports are connected together. In order to avoid conflict on I2C interface during the DDC data transfer, the electrical switching of U301 is isolated and controlled by scaling IC pin GPIO7.

8.4 Audio Circuit

Please refer to section 7, sound AMP Schematic. The audio Right/Left channels are fed into pin 6 /8 of sound AMP U701 (AN7522) while Audio plug is inserted in J701 jack. The sound output amplitude will depend on this bias voltage on pin 9 of U701, which is always controlled by Q702. When mute is activated, the Q703 will be forced to saturation to block sound output. When standby is activated, the Q705/Q704 will also go to saturation to bypass the sound input signal to ground. The sound outputs of U701 will drive speakers via CN701 connecter.

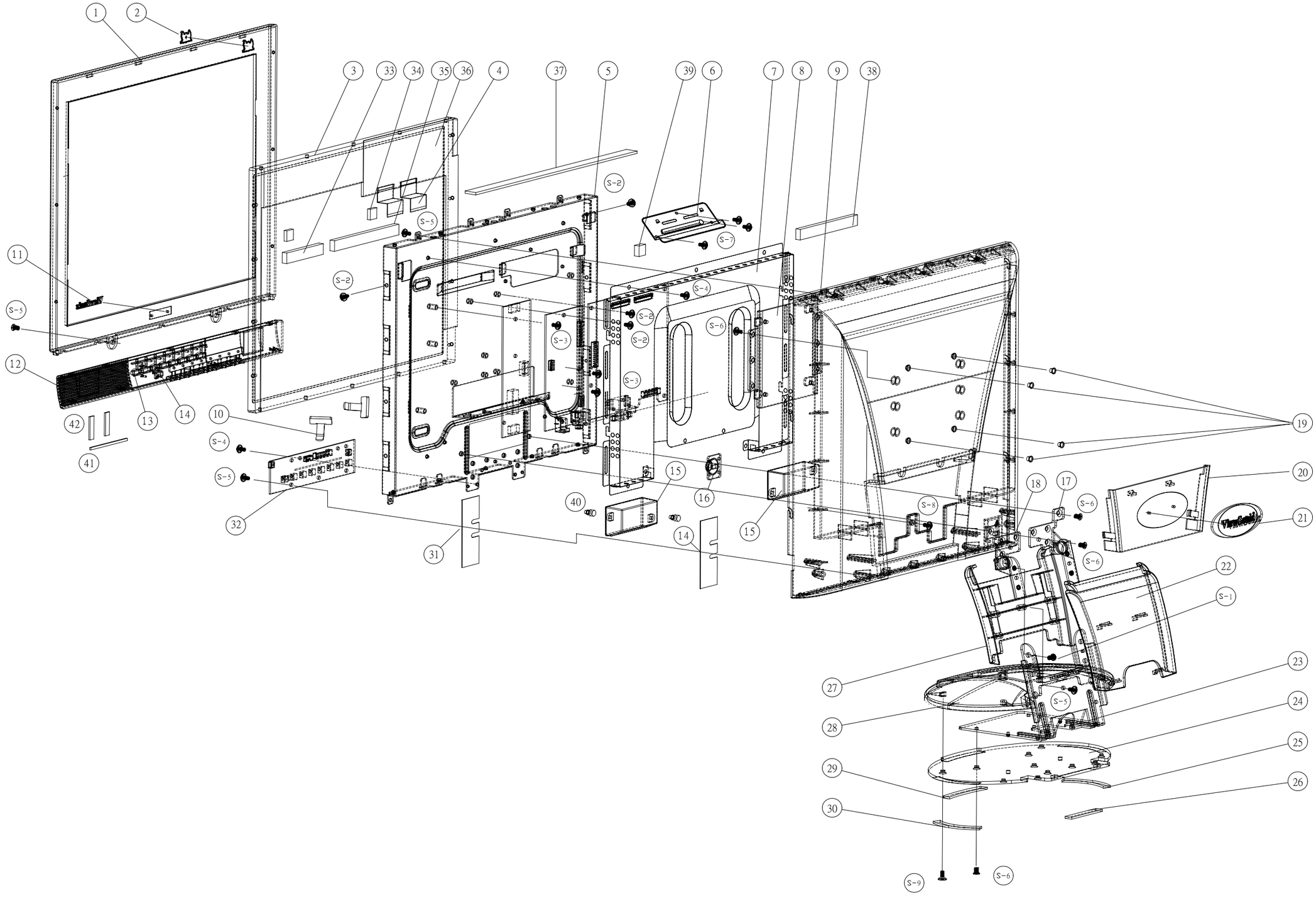
8. ELECTRICAL PARTS LIST

No	Part Name	ViewSonic P/N	Stock No	Qty
1	F/C	C-FP-0301-0896	5733715800	
2	CPT PANEL	E-CRT-0409-0241	5051253608	
3	FFC CABLE		5784610007	
4	POWER ADAPTER	A-AD-0114-0156	5775600018	
5	I/F BOARD ASS'Y	B-IF-0222-0026	5799062700	
6	INVERTER WIRE	M-WR-0828-0656	5057900521	
7	SHIELD PLATE	M-MS-0808-8273	5731274500	
8	INVERTER BOARD	B-SB-0221-0466	5799062703	
9	BIRD LOGO	M-MS-0808-8280	5733422700	
10	LED HOLDER		5642613201	
11	KEY PAD BOARD	B-SB-0221-0464	5799062701	
12	KEY PAD WIRE 12PIN	M-MS-0808-8287	5784011204	
13	KEY PAD WIRE 5PIN	M-MS-0808-8288	5784011205	
14	GASKET(V3)(45X10X7)		5736214632	
15	GASKET(V1)(10X7X2)		5736214630	
16	GASKET(V4)(65X10X7)		5736214633	
17	GASKET(V2)(296X7X2)		5736214631	
18	GASKET(V5)(80X7X2)		5736214634	
19	GASKET(V6)(10X10X7)		5736214635	
20	LCD CHASSIS		5731274200	
21	FFC PLATE	M-MS-0808-8274	5731274600	
22	HINGE R	M-MS-0808-8278	5731708100	
23	HINGE L	M-MS-0808-8279	5731708200	
24	INTERFACE CHASSIS		5731433700	
25	MOUNTING BRACKET	M-MS-0808-8275	5731433800	
26	BACK COVER	C-BC-0302-0437	5733715700	
27	CODEKEEPEER	M-MS-0808-8277	5731593000	
28	NAME PLATE	M-MS-0808-8281	5733422800	
29	F/C2		5733715900	
30	VGA CABLE	A-VC-0101-0272	5784011503	
31	BUTTON	PL-BT-0706-0110	5733636900	
32	INDICATE	M-MS-0808-8284	5733716200	
33	MANUAL		NO (A-CD)	
34	SPEAKER L	E-SK-0412-0055	5786600027	
35	SPEAKER R	E-SK-0412-0056	5786600028	
36	POWER CORD (UL)	A-PC-0106-0169	5056705900	
37	POWER CORD (VDE)	A-PC-0106-0170	5056705939	
38	KENSHINGTON	M-MS-0808-8276	5731433900	
39	MOUNT RUBBER	M-MS-0808-8285	5736138100	
40	HINGE COVER	M-CV-0830-2340	5733716100	
41	VIEW SONIC LOGO		5733422900	
42	NECK 2	M-MS-0808-8283	5733576900	
43	NECK PLATE	M-MS-0808-8272	5731274400	
44	BASE PLATE	M-MS-0808-8271	5731274300	
45	FOOT RUBBER 1	PL-PD-0714-0072	5736138200	
46	FOOT RUBBER 2	PL-PD-0714-0073	5736138300	
47	FOOT RUBBER 3	PL-PD-0714-0074	5736138400	
48	NECK 1	M-MS-0808-8282	5733576800	
49	BASE	PL-PS-0715-0169	5733716000	
50	DC-AMP BOARD	B-SB-0221-0465	5799062702	
51	DC-AMP TO I/F WIRE	M-MS-0808-8288	5784011205	
52	KEY TO DC-AMP WIRE	M-MS-0808-8286	5784010501	
53	AUDIO CABLE	A-AU-0120-0035	5784010102	
S-1	SCREW M4X6		7001260616	
S-2	SCREW M3X6		7190571011	
S-3	SCREW M3X6		7001170612	

S-4	SCREW M3X6		7132160651	
S-5	SCREW M3X8		7134161186	
S-6	SCREW M4X8L		7004261116	
S-7	SCREW M3X4		7131160252	
S-8	SCREW M3X10		7132161456	
S-9	SCREW M3X6		7034160656	

OTHER ELECTRICAL PARTS					
Item#	LocNo	Part Name	ViewSonic P/N	Stock No	Qty
1	U200	PST9129	E-IC-0401-256	6640005554	
2	U201	S524C80D41	E-IC-0401-257	6647051859	
3	Q201	DTC114TKA/KSR1110	E-Q-0402-1561	6621039854	
4	Q202	DTC 114TKA/KSR1110	E-Q-0402-1561	6621039854	
5	F221	4A/125V	E-FS-0410-009	5054440003	
6	U220	RC1117M-3.3	E-IC-0401-256	6640003862	
7	D220	ES1G	E-D-0403-2073	6615024352	
8	ZD301	MMSZ5232B	E-D-0403-2072	6615009858	
9	ZD302	MMSZ5232B	E-D-0403-2072	6615009858	
10	ZD303	MMSZ5232B	E-D-0403-2072	6615009858	
11	ZD304	MMSZ5232B	E-D-0403-2072	6615009858	
12	ZD304,U30	S524C20D11/BR24C02F-WE2/AT24C02	E-IC-0401-257	6647051873	
13	U301	74HC4052D	E-IC-0401-256	6646010808	
14	X400	14.318MHz	E-T-0408-0485	6699106805	
15	U401	A290011TL-70	E-IC-0401-257	6647000009	
16	Q601	DTC114TKA/KSR1110	E-Q-0402-1561	6621039854	
17	Q602	SI2301DS/FDN360P/AC340	E-Q-0402-1563	6626007053	
18	F603	1206FA 750mA 32V	E-FS-0410-010	5054407592	
19	U602	RT34063A	E-IC-0401-240	6646021651	
20	Q603	SI2303DS/FDN360P	E-Q-0402-1564	6626007054	
21	Q604	DTC114TKA/KSR1110	E-Q-0402-1561	6621039854	
22	F601	1206FA500mA32V	E-FS-0410-010	5054405092	
23	Q605	SI2301DS/FDN360P	E-Q-0402-1563	6626007053	
24	Q606	DTC114TKA	E-Q-0402-1561	6621039854	
25	U604	RT9164CG	E-IC-0401-257	6646021652	
26	U603	RT916A33CG	E-IC-0401-257	6646021653	
27	Q702	DTC114TKA/KSR1110	E-Q-0402-1561	6621039854	
28	Q703	DTC114TKA	E-Q-0402-1561	6621039854	
29	Q704	DTC114TKA	E-Q-0402-1561	6621039854	
30	Q705	DTC114TKA	E-Q-0402-1561	6621039854	
31	U701	AN7522	E-IC-0401-256	6644005851	
32	F801	4A/125V	E-FS-0410-009	5054440003	
33	U801	BA971F	E-IC-0401-256	6640008452	
34	Q801	SST4401	E-Q-0402-1559	6621000952	
35	Q802	SST4403	E-Q-0402-1562	6623000951	
36	Q803	SST4401	E-Q-0402-1559	6621000952	
37	Q804	SST4403		662300951	
38	Q805	DTC144WKA	E-Q-0402-1560	6621001855	
39	Q830	DTC114TKA/KSR1110	E-Q-0402-1561	6621039854	
40	Q831	DTC114TKA/KSR1110	E-Q-0402-1561	6621039854	
41	U802	AO4403	E-IC-0401-256	6644005156	
42	U803	AO4403	E-IC-0401-256	6644005156	
43	D800	SR34	E-D-0403-2071	6615002251	
44	D801	SR34	E-D-0403-2071	6615002251	
45	F802	3216FF-2.5A	E-FS-0410-010	5054425090	
46	D802	ZENER-5.6V	E-D-0403-2072	6615009858	

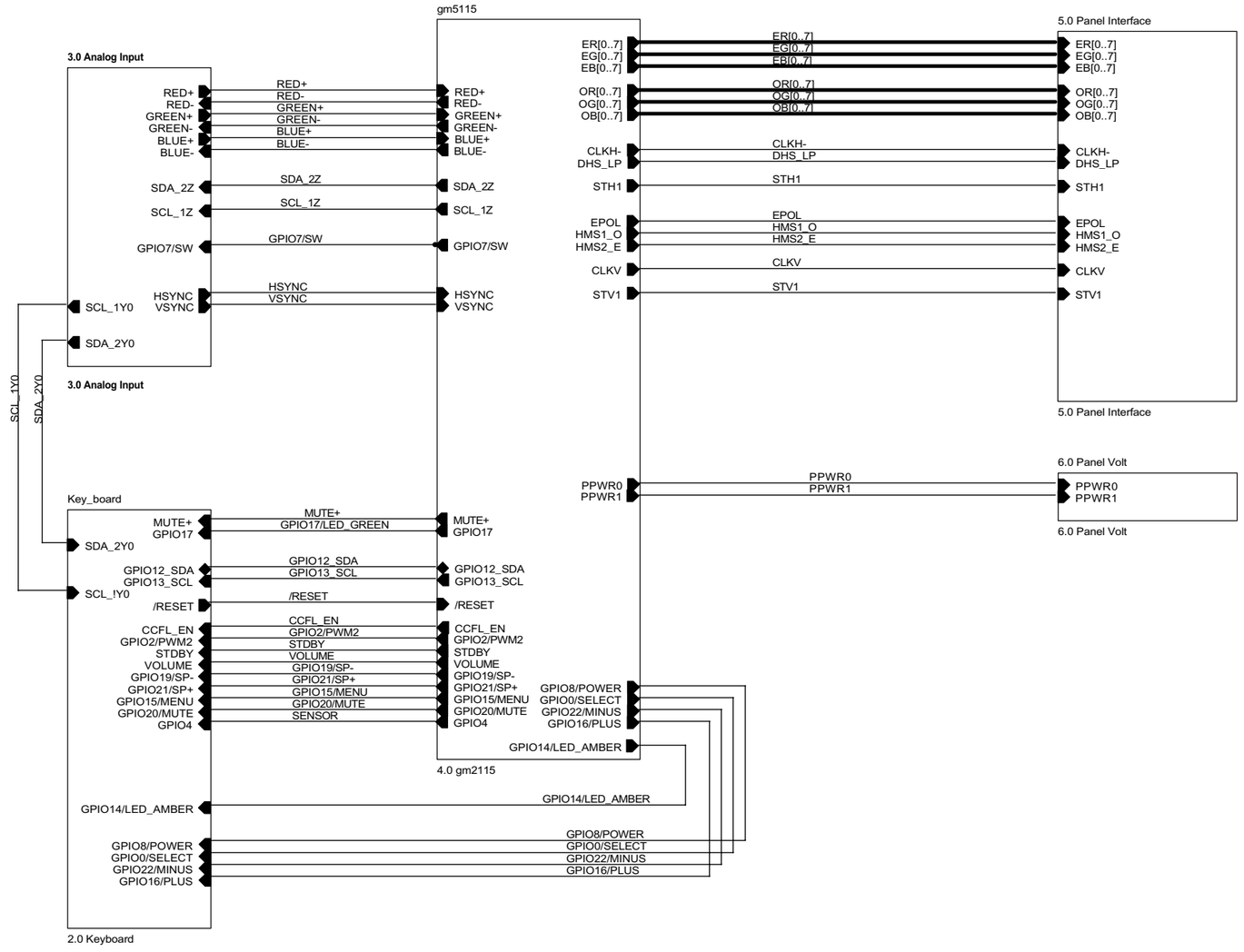
9. EXPLODED DIAGRAM AND SPARE PARTS LIST



9. MECHANICAL PARTS LIST

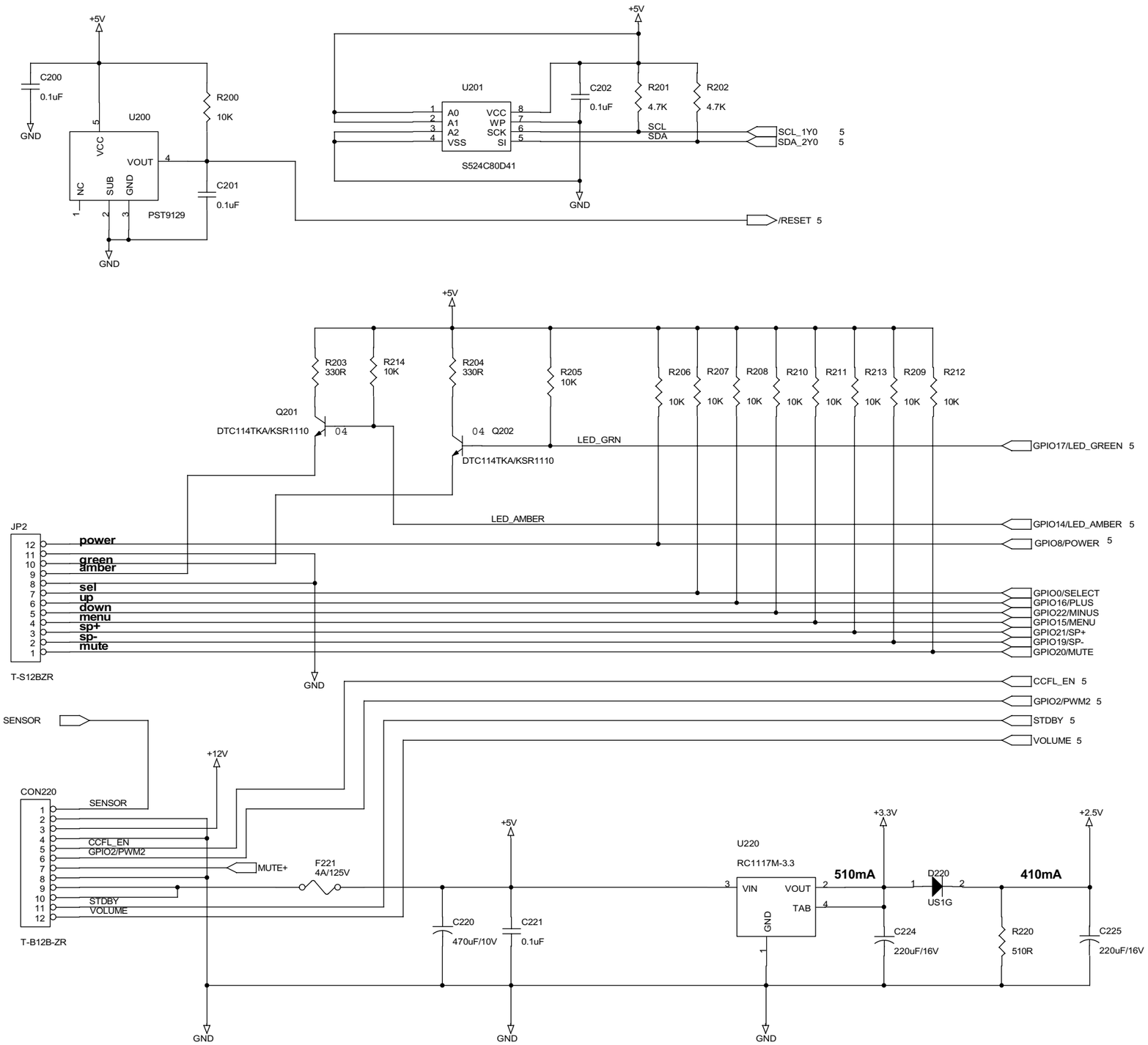
MECHANICAL PARTS LIST					
No	Designation	ViewSonic P/N	Identification No	Qty	Remark
1	F/C	C-FP-0301-0896	5733715800	1	
2	Bird Logo	M-MS-0808-8280	5733422700	1	
3	LCD Panel	E-CRT-0409-0241	5051253608	1	
4	Flexible Flat Cable		5784610007	1	
5	LCD Chassis		5731274200	1	
6	Flexible Flat Cable		5784610007	1	
7	Interface Shield		5731433700	1	
8	Mounting Bracket	M-MS-0808-8275	5731433800	1	
9	Back Cover	C-BC-0302-0437	5733715700	1	
10	Codekeeper	M-MS-0808-8277	5731593000	3	
11	Name Plate	M-MS-0808-8281	5733422800	1	
12	F/C2		5733715900	1	
13	Button	PL-BT-0706-0110	5733636900	1	
14	Indicate	M-MS-0808-8284	5733716200	1	
15	Speaker Ass'y			2	
16	KENSINGTON	M-MS-0808-8276	5731433900	1	
17	HINGE L	M-MS-0808-8279	5731708200	1	
18	HINGE R	M-MS-0808-8278	5731708100	1	
19	Mount Rubber	M-MS-0808-8285	5736138100	4	
20	Hinge Cover	M-CV-0830-2340	5733716100	1	
21	View Sonic Logo		5733422900	1	
22	Neck 2	M-MS-0808-8283	5733576900	1	
23	Neck Plate	M-MS-0808-8272	5731274400	1	
24	Base Plate	M-MS-0808-8271	5731274300	1	
25	Foot Rubber 2	PL-PD-0714-0073	5736138300	1	
26	Foot Rubber 1	PL-PD-0714-0072	5736138200	1	
27	Neck 1	M-MS-0808-8282	5733576800	1	
28	BASE	PL-PS-0715-0169	5733716000	1	
29	Foot Rubber 3	PL-PD-0714-0074	5736138400	1	
30	Foot Rubber 2	PL-PD-0714-0073	5736138300	1	
31	Shield Plate	M-MS-0808-8273	5731274500	2	
32	Key Board			1	
33	GASKET (V3)		5736214632	1	45X10X7
34	GASKET (V1)		5736214630	2	10X7X2
35	GASKET (V4)		5736214633	1	65X10X7
36	CU FOIL LABEL		5736214654	1	130X56X0.05
37	GASKET (V2)		5736214631	1	296X7X2
38	GASKET (V5)		5736214634	1	80X7X2
39	GASKET (V6)		5736214635	1	10X10X7
40	CUDHION RUBBER		5642026500	2	
41	CUDHION (A)		5736214013	2	501X3.5X0.6
42	CUDHION (B)		5736214014	4	25X5X0.6
S-1	SCREW MACHINE PAN HEAD		7001260616	4	Hinge L/R
S-2	SCREW HEX HEAD M3x6 S-NI		7190571011	4	PANEL
S-2	SCREW HEX HEAD M3x6 S-NI		7190571011	4	PANEL
S-2	SCREW HEX HEAD M3x6 S-NI		7190571011	4	IF BOARD
S-2	SCREW HEX HEAD M3x6 S-NI		7190571011	2	AUDIO BOARD
S-3	SCREW ISO PP M3x6 S-NI		7001170612	2	AUDIO BOARD
S-3	SCREW ISO PP M3x6 S-NI		7001170612	3	INVERTER BOARD
S-4	TS PAN CLR S-TITE M3x6 S-ZN		7132160651	2	KEY BOARD
S-4	TS PAN CLR S-TITE M3x6 S-ZN		7132160651	7	INTERFACE SHIELD
S-5	SCREW PZP M3x8 P TYPE S-PC		7134161186	3	KEY BOARD
S-5	SCREW PZP M3x8 P TYPE S-PC		7134161186	4	NECK PLATE
S-5	SCREW PZP M3x8 P TYPE S-PC		7134161186	4	B/C + CHASSIS
S-5	SCREW PZP M3x8 P TYPE S-PC		7134161186	2	FC+B/C
S-6	SCREW ISO MACHINE FLAT		7004261116	7	BASE PLATE
S-6	SCREW ISO MACHINE FLAT		7004261616	4	HINGE L
S-6	SCREW ISO MACHINE FLAT		7004261616	4	HINGE R
S-6	SCREW ISO MACHINE FLAT		7004261116	6	MOUNTING BRACKET
S-7	SCREW PRWS M3x4 S-TITE S-		7131160252	3	FFC PLATE
S-8	TS PAN CLR S-TITE M3x10 S-		7132161456	1	B/C + CHASSIS
S-9	SCREW TAPPING FLAT HEAD-2		7034160656	4	BASE PLATE

10. BLOCK DIAGRAM

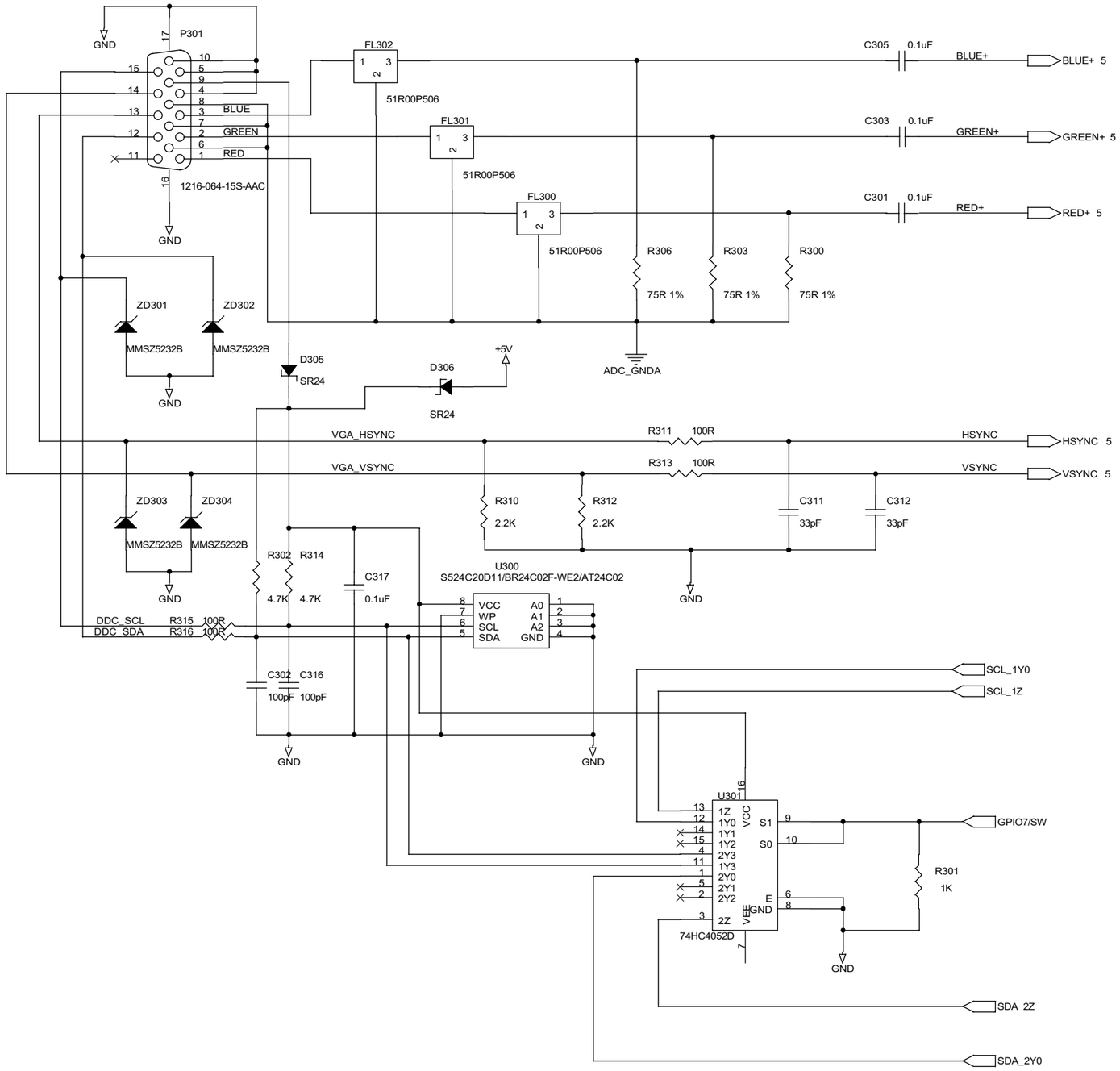


Title	1.1 Top Level	
Size A3	Document Number E91001	Rev 1
Date: Wednesday, October 02, 2002	Sheet 2 of 7	

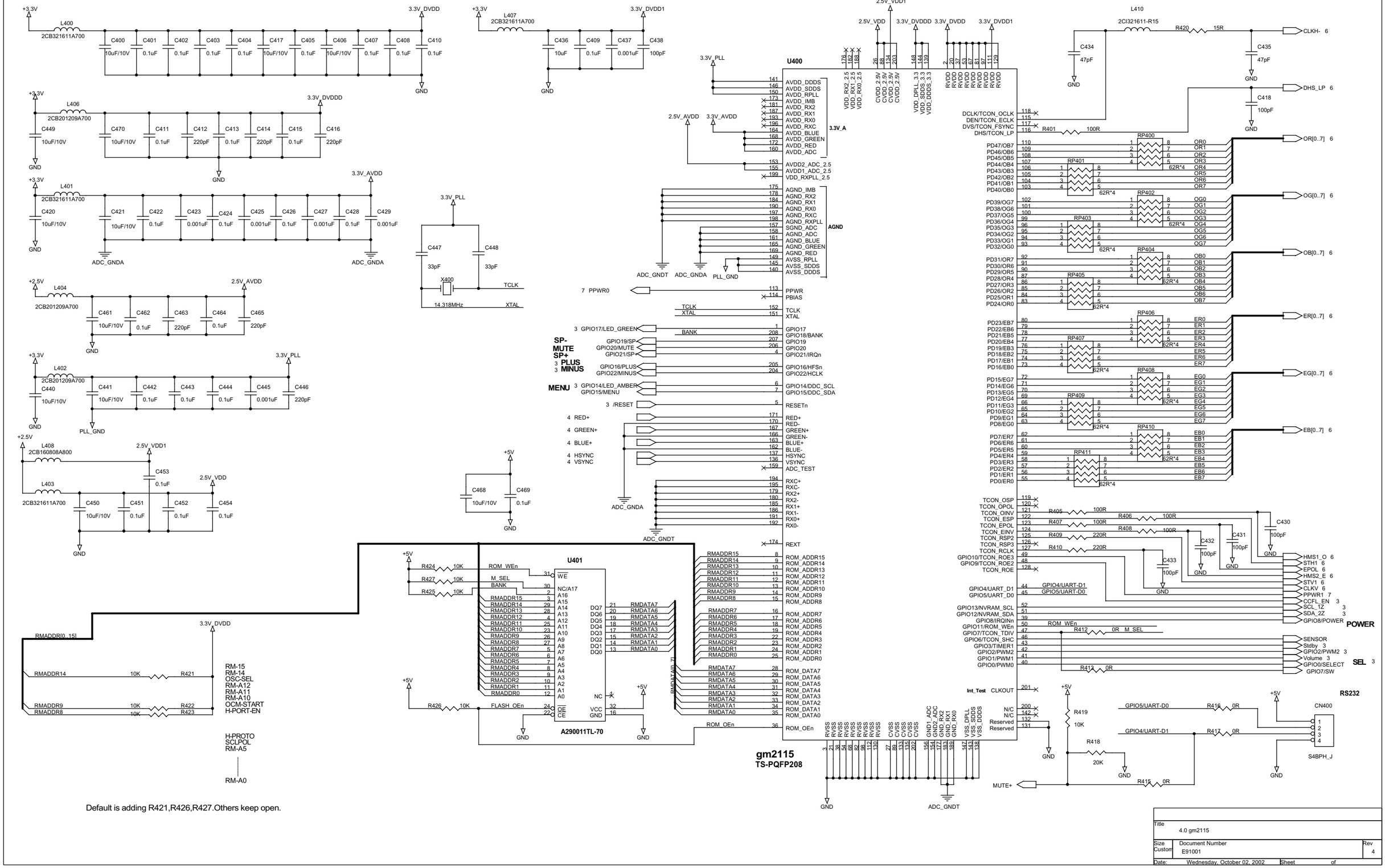
11. SCHEMATIC DIAGRAM



Title	2.0 Keyboard	
Size A3	Document Number E91001	Rev 1
Date: Wednesday, October 02, 2002	Sheet 3 of 7	



Title	3.0 Analog Input	
Size A3	Document Number E91001	Rev 2
Date: Wednesday, October 02, 2002	Sheet 4 of 7	


L400
2CB321611A700
C400 10uF/10V
C401 0.1uF
C402 0.1uF
C403 0.1uF
C404 0.1uF
C417 10uF/10V
C405 0.1uF
C406 10uF/10V
C407 0.1uF
C408 0.1uF
C410 0.1uF
+3.3V
3.3V_DVDD
GND
L407
2CB321611A700
C436 10uF
C409 0.1uF
C437 0.001uF
C438 100pF
3.3V_DVDD1
L406
2CB201209A700
C449 10uF/10V
C470 10uF/10V
C411 0.1uF
C412 220pF
C413 0.1uF
C414 220pF
C415 0.1uF
C416 220pF
L401
2CB321611A700
C420 10uF/10V
C421 10uF/10V
C422 0.1uF
C423 0.001uF
C424 0.1uF
C425 0.001uF
C426 0.1uF
C427 0.001uF
C428 0.1uF
C429 0.001uF
3.3V_AVDD
ADC_GNDA
L404
2CB201209A700
C461 10uF/10V
C462 0.1uF
C463 220pF
C464 0.1uF
C465 220pF
+2.5V
2.5V_AVDD
L402
2CB201209A700
C440 10uF/10V
C441 10uF/10V
C442 0.1uF
C443 0.1uF
C444 0.1uF
C445 0.001uF
C446 220pF
3.3V_PLL
PLL_GND
L408
2CB160808A800
C453 0.1uF
2.5V_VDD1
L403
2CB321611A700
C450 10uF/10V
C451 0.1uF
C452 0.1uF
C454 0.1uF
2.5V_VDD
C447 33pF
C448 33pF
X400
14.318MHz
TCLK
XTAL
C468 10uF/10V
C469 0.1uF
+5V
U400
3.3V_PLL
AVDD_DDDS
AVDD_SDDS
AVDD_RPLL
AVDD_IMB
AVDD_RX2
AVDD_RX1
AVDD_RX0
AVDD_RXC
AVDD_BLUE
AVDD_GREEN
AVDD_RED
AVDD_ADC
3.3V_A
2.5V_AVDD
3.3V_AVDD
AVDD2_ADC_2.5
AVDD1_ADC_2.5
VDD_RXPLL_2.5
AGND_IMB
AGND_RX2
AGND_RX1
AGND_RX0
AGND_RXC
AGND_RXPLL
SGND_ADC
AGND_ADC
AGND_BLUE
AGND_GREEN
AGND_RED
AVSS_RPLL
AVSS_SDDS
AVSS_DDDS
AGND
ADC_GNDT
ADC_GNDA
PLL_GND
7 PPWR0
PPWR
PBIAS
TCLK
XTAL
3 GPIO17/LED_GREEN
BANK
GPIO17
GPIO18/BANK
GPIO19
GPIO20
GPIO21/IRQn
SP-
MUTE
SP+
3 PLUS
3 MINUS
GPIO19/SP-
GPIO20/MUTE
GPIO21/SP+
GPIO16/PLUS
GPIO22/MINUS
GPIO16/HFSn
GPIO22/HCLK
MENU
3 GPIO14/LED_AMBER
GPIO15/MENU
GPIO14/DDC_SCL
GPIO15/DDC_SDA
3 /RESET
RESETn
4 RED+
4 GREEN+
4 BLUE+
4 HSYNC
4 VSYNC
RED+
RED-
GREEN+
GREEN-
BLUE+
BLUE-
HSYNC
VSYNC
ADC_TEST
RXC+
RXC-
RX2+
RX2-
RX1+
RX1-
RX0+
RX0-
REXT
ADC_GNDA
ADC_GNDT
VDD_RX2_2.5
VDD_RX1_2.5
VDD_RX0_2.5
CVDD_2.5V
CVDD_2.5V
CVDD_2.5V
CVDD_2.5V
VDD_DPLL_3.3
VDD_SSS_3.3
VDD_DDDS_3.3
RVDD
DCLK/TCON_OCLK
DEN/TCON_ECLK
DVS/TCON_FSYNC
DHS/TCON_LP
R401 100R
L410
2CI321611-R15
R420 15R
C434 47pF
C435 47pF
C418 100pF
CLKH- 6
DHS_LP 6
RP400
RP401
RP402
RP403
RP404
RP405
RP406
RP407
RP408
RP409
RP410
RP411
62R*4
PD47/OB7
PD46/OB6
PD45/OB5
PD44/OB4
PD43/OB3
PD42/OB2
PD41/OB1
PD40/OB0
PD39/OG7
PD38/OG6
PD37/OG5
PD36/OG4
PD35/OG3
PD34/OG2
PD33/OG1
PD32/OG0
PD31/OR7
PD30/OR6
PD29/OR5
PD28/OR4
PD27/OR3
PD26/OR2
PD25/OR1
PD24/OR0
PD23/EB7
PD22/EB6
PD21/EB5
PD20/EB4
PD19/EB3
PD18/EB2
PD17/EB1
PD16/EB0
PD15/EG7
PD14/EG6
PD13/EG5
PD12/EG4
PD11/EG3
PD10/EG2
PD9/EG1
PD8/EG0
PD7/ER7
PD6/ER6
PD5/ER5
PD4/ER4
PD3/ER3
PD2/ER2
PD1/ER1
PD0/ER0
OR[0..7] 6
OG[0..7] 6
OB[0..7] 6
ER[0..7] 6
EG[0..7] 6
EB[0..7] 6
TCON_OSP
TCON_OPOL
TCON_OINV
TCON_ESP
TCON_EPOL
TCON_EINV
TCON_RSP2
TCON_RSP3
TCON_RCLK
GPIO10/TCON_ROE3
GPIO9/TCON_ROE2
TCON_ROE
R405 100R
R406 100R
R407 100R
R408 100R
R409 220R
R410 220R
C430 100pF
C431 100pF
C432 100pF
C433 100pF
HMS1_O 6
STH1 6
EPOL 6
HMS2_E 6
STV1 6
CLKV 6
PPWR1 7
CCFL_EN 3
SCL_TZ 3
SDA_2Z 3
GPIO8/POWER
POWER
GPIO4/UART-D1
GPIO5/UART-D0
GPIO13/NVRAM_SCL
GPIO12/NVRAM_SDA
GPIO8/IRQINn
GPIO11/ROM_WEn
GPIO7/TCON_TDIV
GPIO6/TCON_SHC
GPIO3/TIMER1
GPIO2/PWM2
GPIO1/PWM1
GPIO0/PWM0
ROM_WEn
R412 0R M_SEL
R413 0R
SENSOR
Stdby 3
GPIO2/PWM2 3
Volume 3
GPIO0/SELECT
GPIO7/SW
SEL 3
Int_Test
CLKOUT
N/C
Reserved
R419 10K
R418 20K
MUTE+
RS232
GPIO5/UART-D0
GPIO4/UART-D1
R416 0R
R417 0R
R415 0R
CN400
S4BPH_J
U401
ROM_WEn
M_SEL
BANK
FLASH_OEn
NC/A17
A16
A15
A14
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
DQ7
DQ6
DQ5
DQ4
DQ3
DQ2
DQ1
DQ0
WE
OE
CE
NC
VCC
GND
A290011TL-70
R424 10K
R427 10K
R425 10K
R426 10K
RMADDR[0..15]
RMADDR15
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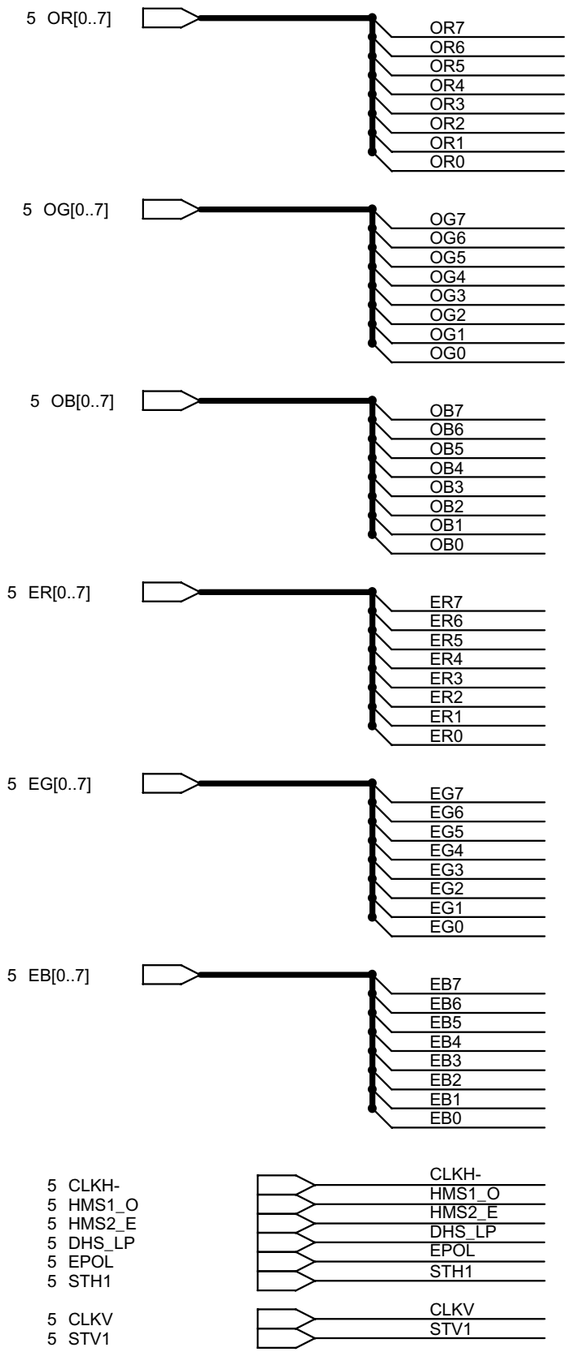
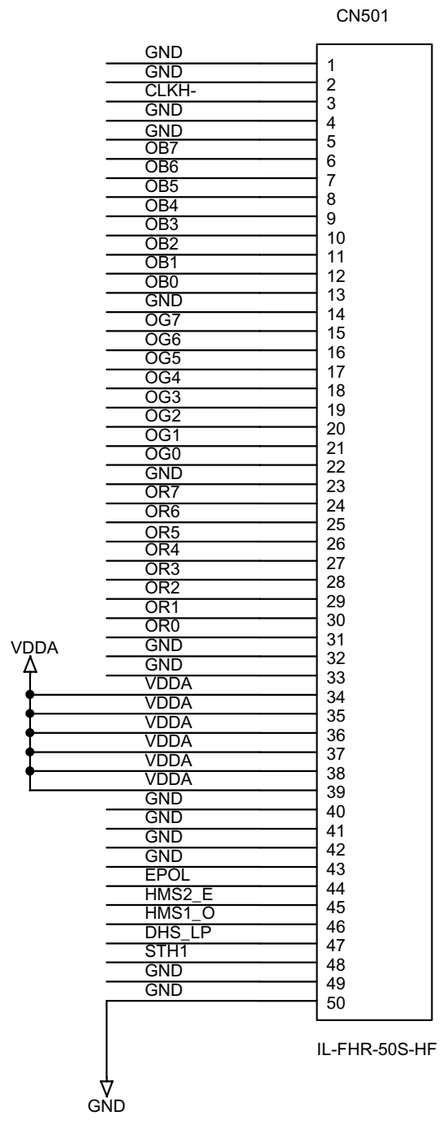
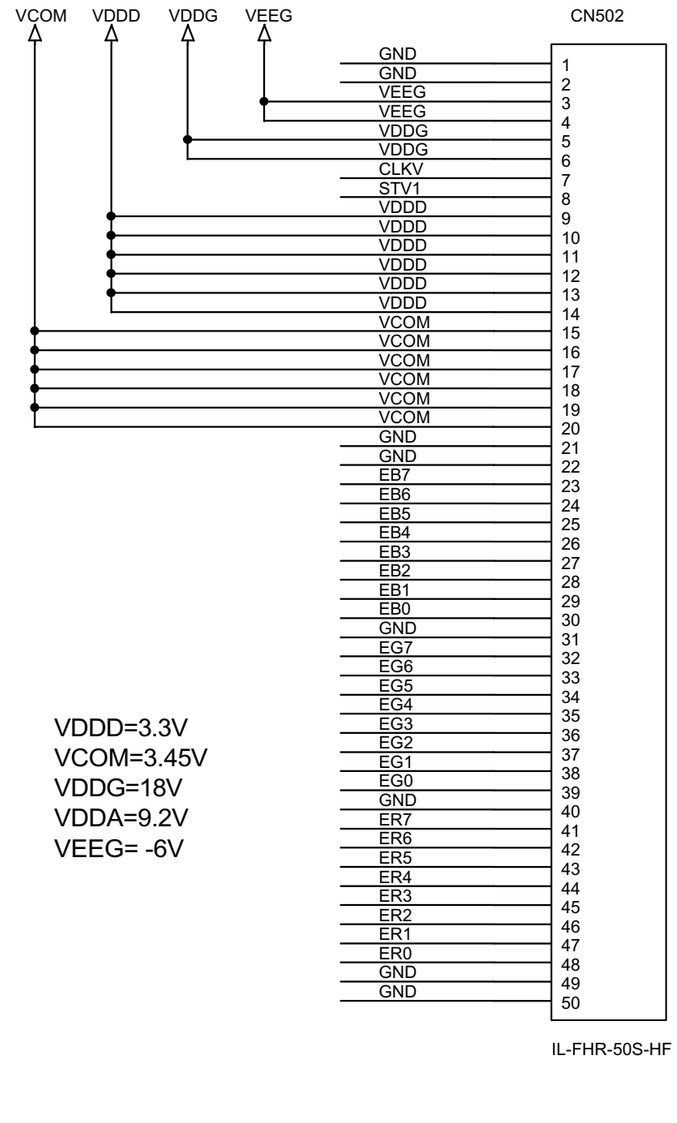
RMADDR11
RMADDR10
RMADDR9
RMADDR8
RMADDR7
RMADDR6
RMADDR5
RMADDR4
RMADDR3
RMADDR2
RMADDR1
RMADDR0
RMDATA7
RMDATA6
RMDATA5
RMDATA4
RMDATA3
RMDATA2
RMDATA1
RMDATA0
ROM_ADDR15
ROM_ADDR14
ROM_ADDR13
ROM_ADDR12
ROM_ADDR11
ROM_ADDR10
ROM_ADDR9
ROM_ADDR8
ROM_ADDR7
ROM_ADDR6
ROM_ADDR5
ROM_ADDR4
ROM_ADDR3
ROM_ADDR2
ROM_ADDR1
ROM_ADDR0
ROM_DATA7
ROM_DATA6
ROM_DATA5
ROM_DATA4
ROM_DATA3
ROM_DATA2
ROM_DATA1
ROM_DATA0
ROM_OEn
RM-15
RM-14
OSC-SEL
RM-A12
RM-A11
RM-A10
OCM-START
H-PORT-EN
H-PROTO
SCLPOL
RM-A5
RM-A0
R421
R422
R423
gm2115
TS-PQFP208
Default is adding R421,R426,R427.Others keep open.
Title
4.0 gm2115
Size
Custom
Document Number
E91001
Rev
4
Date:
Wednesday, October 02, 2002
Sheet
of

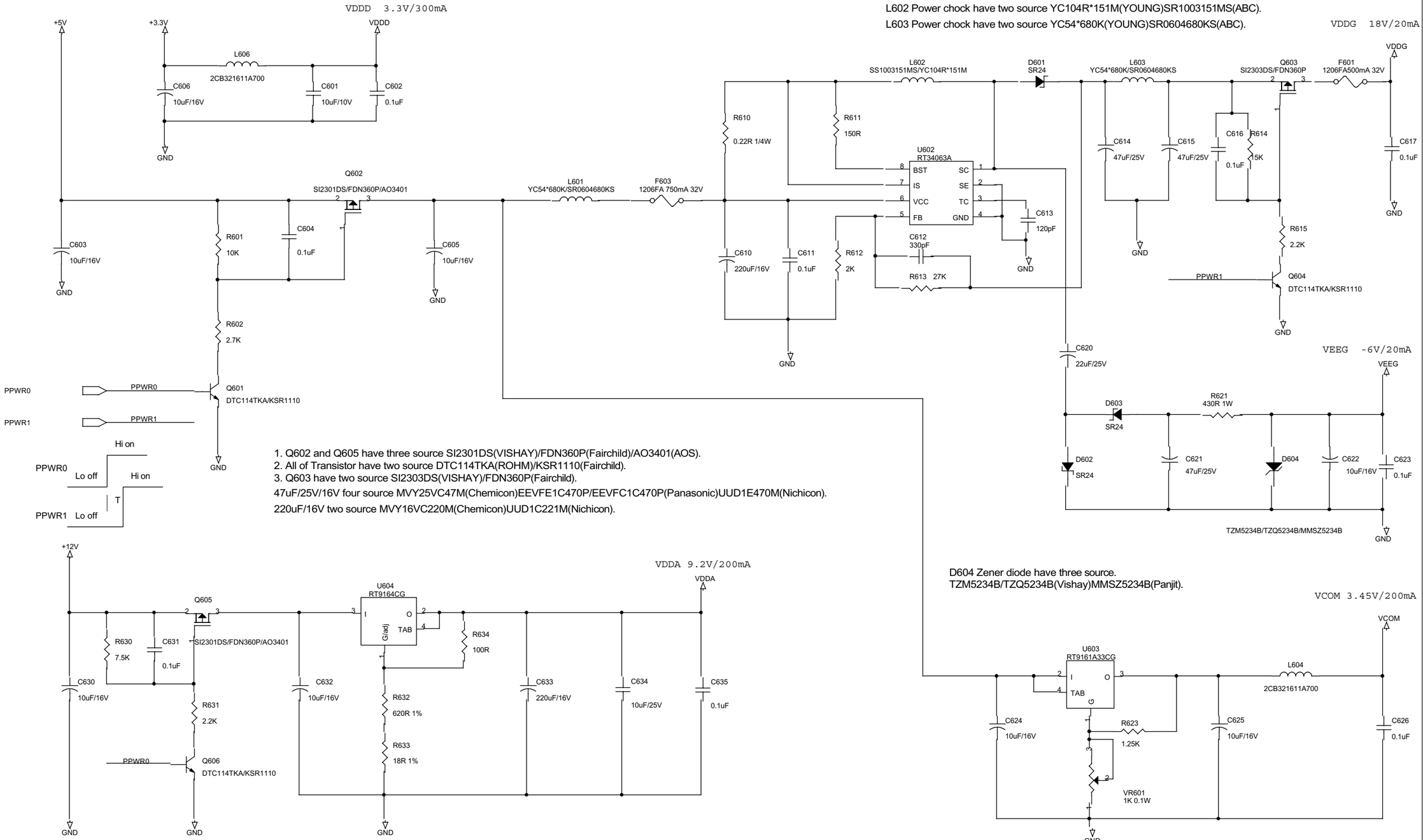




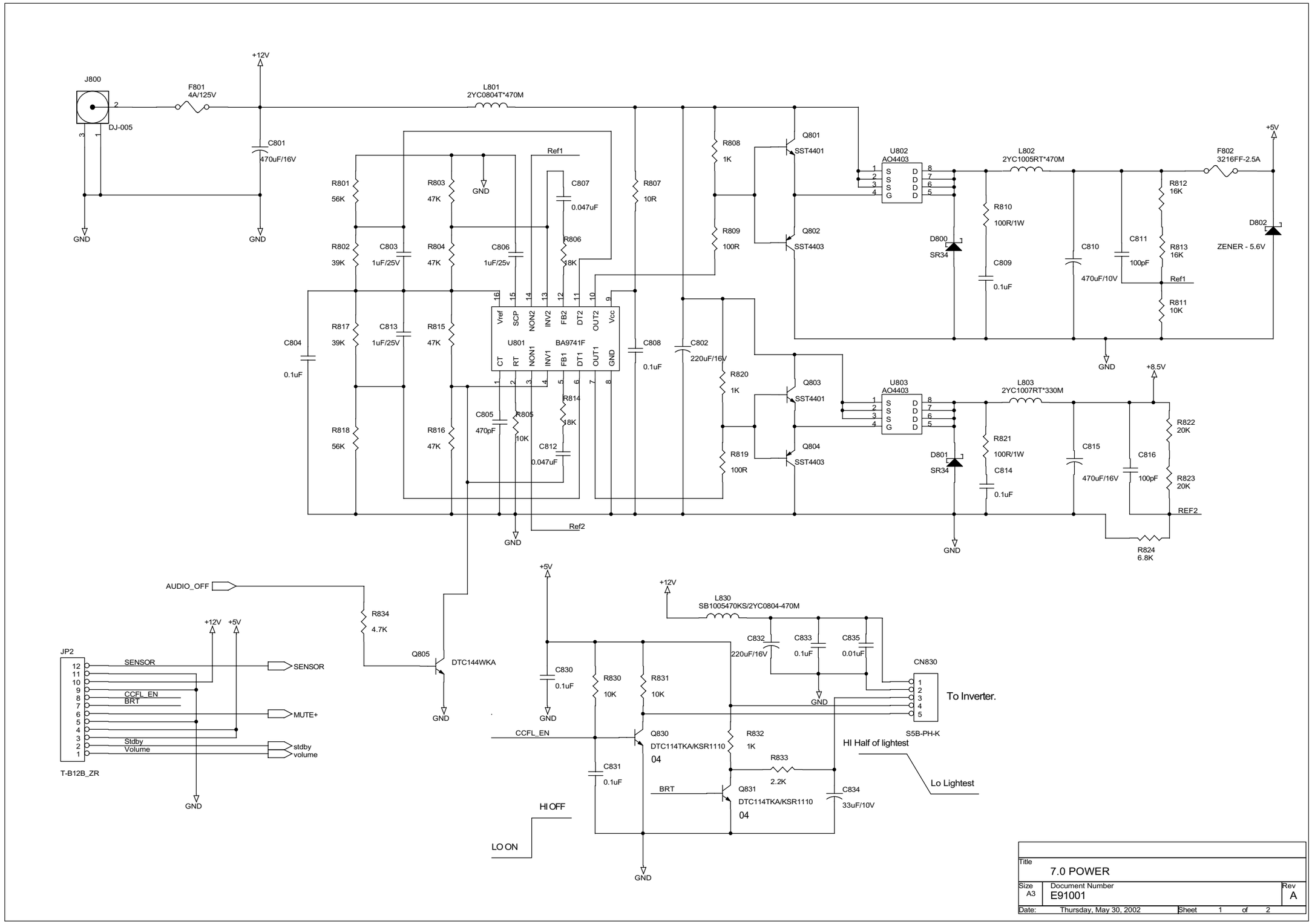


VDDD=3.3V
VCOM=3.45V
VDDG=18V
VDDA=9.2V
VEEG= -6V

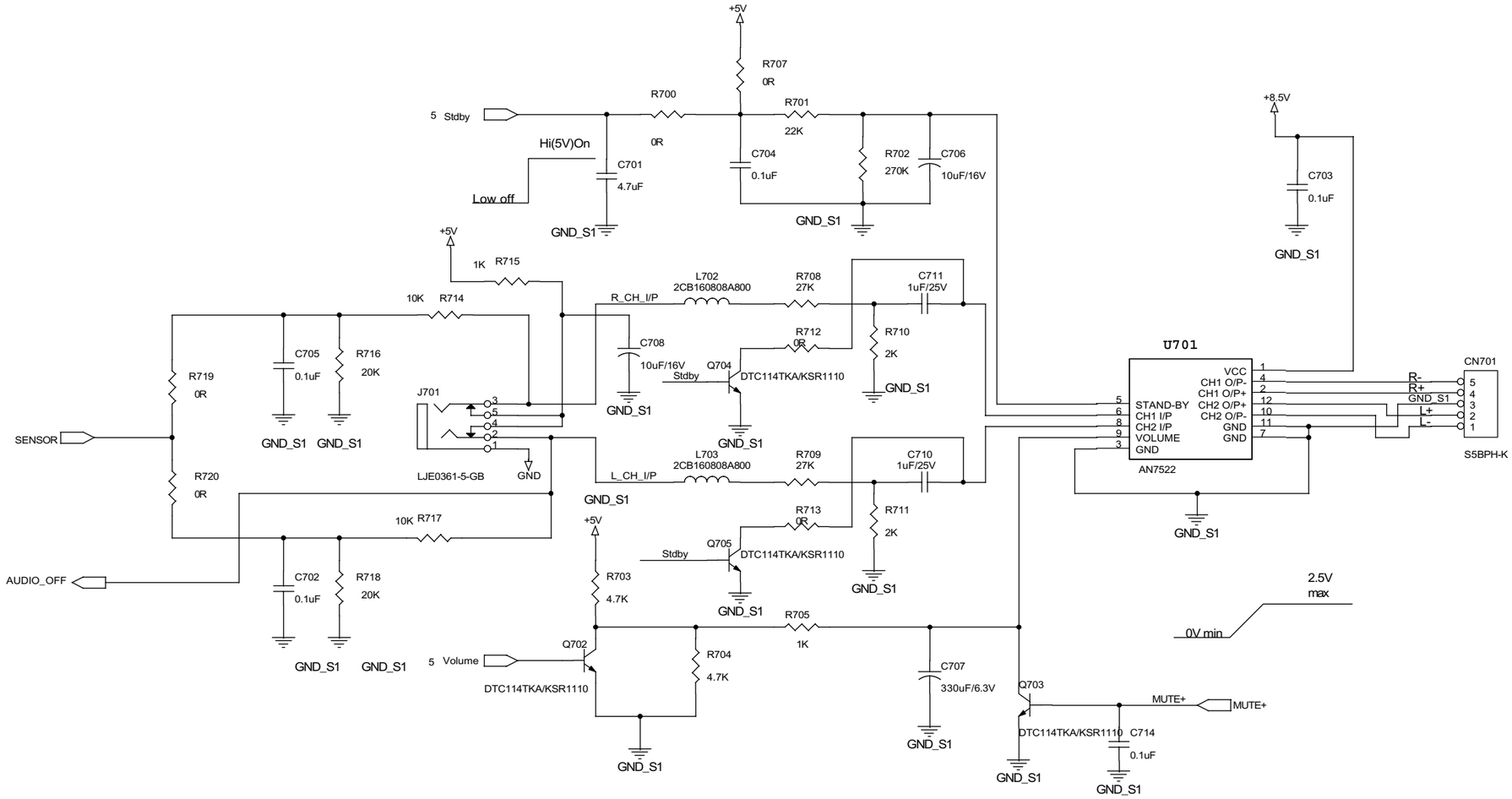
Title: 5.0 Panel Interface		
Size: A4	Document Number: E91001	Rev: 1
Date: Wednesday, October 02, 2002	Sheet 6 of 7	



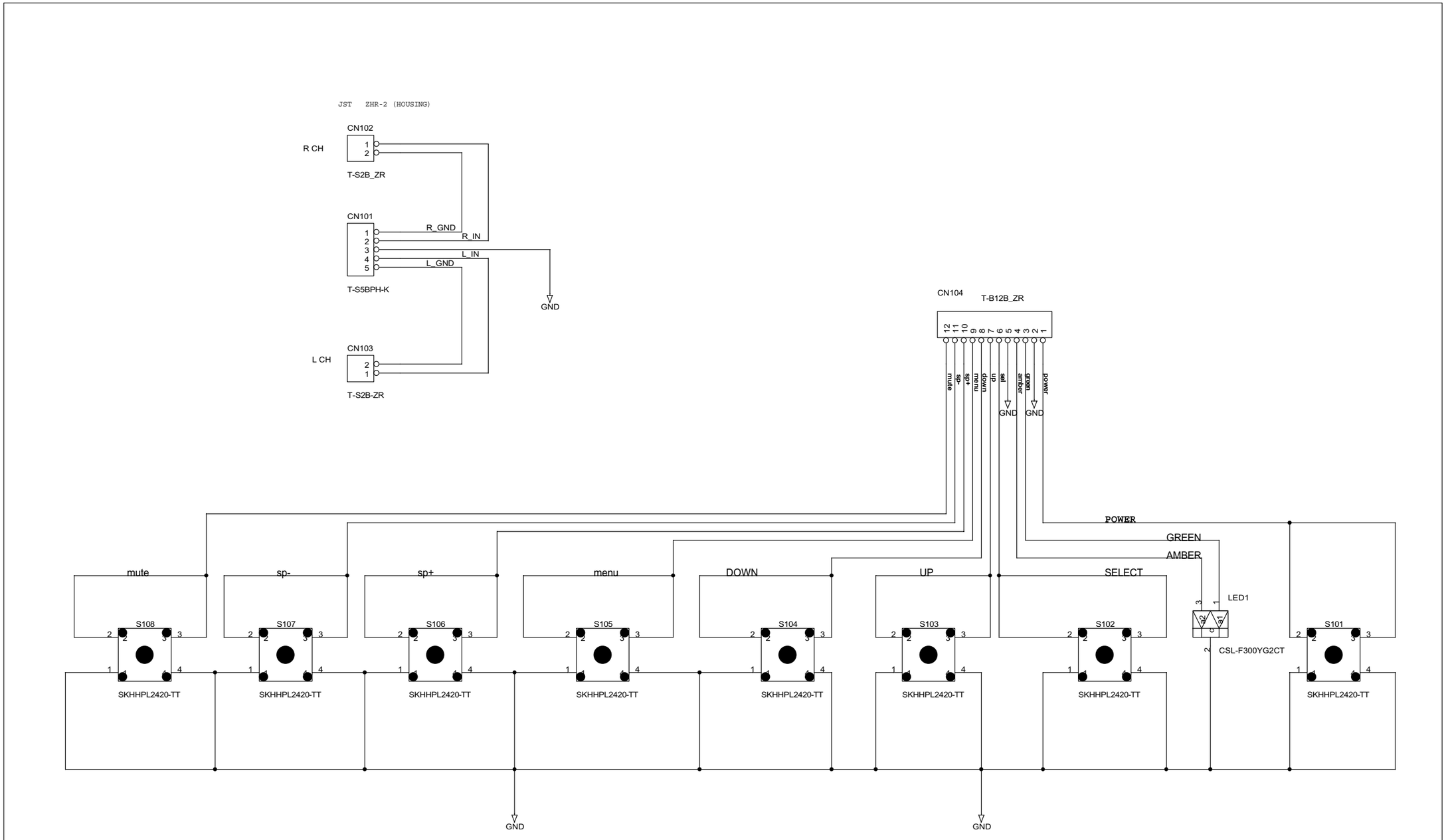
Title	6.0 Panel Volt	
Size: Custom	Document Number: E91001	Rev: 5
Date: Wednesday, October 02, 2002	Sheet 7 of 9	



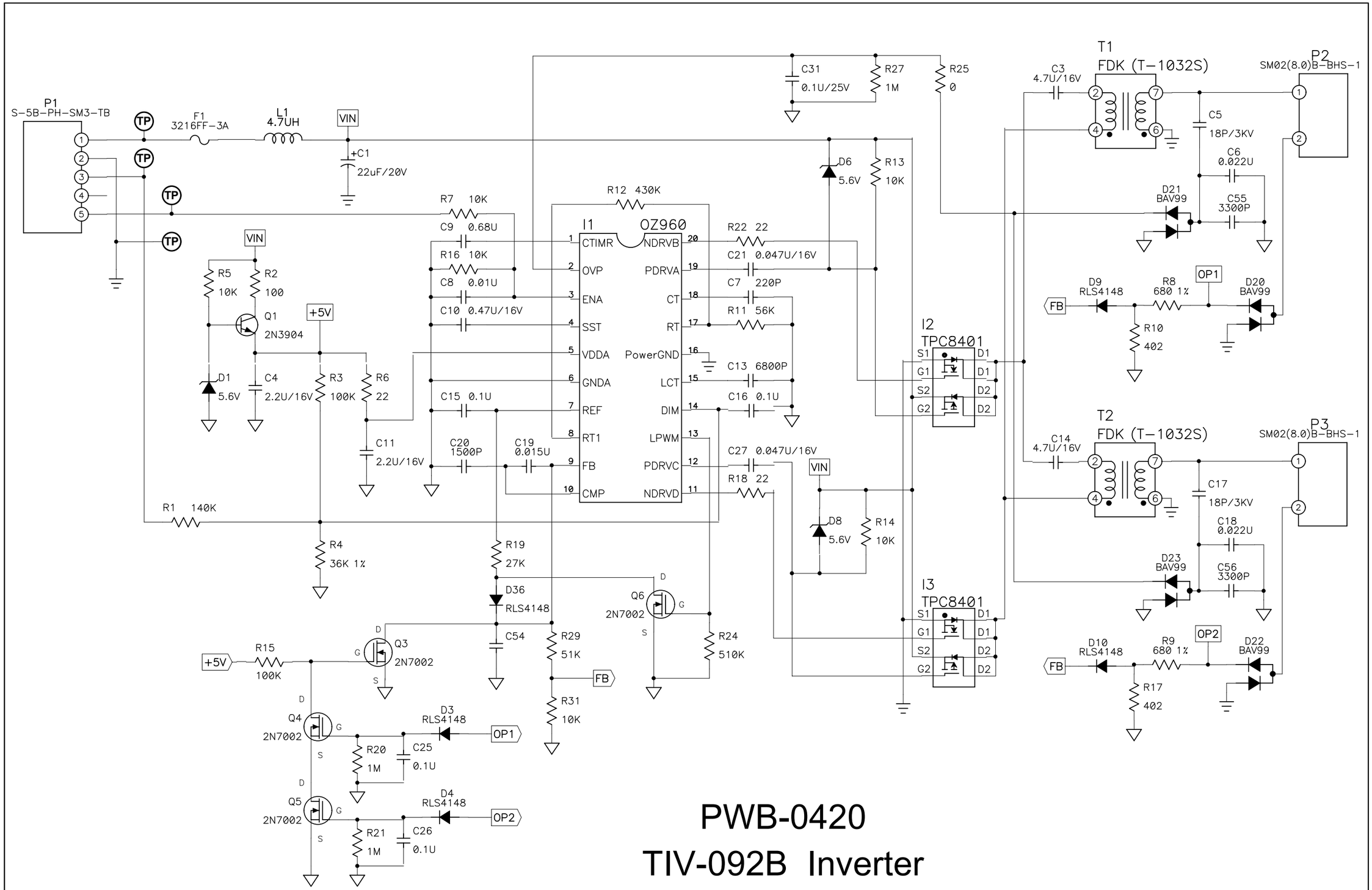
Title	7.0 POWER		
Size A3	Document Number E91001		Rev A
Date: Thursday, May 30, 2002	Sheet 1 of 2		



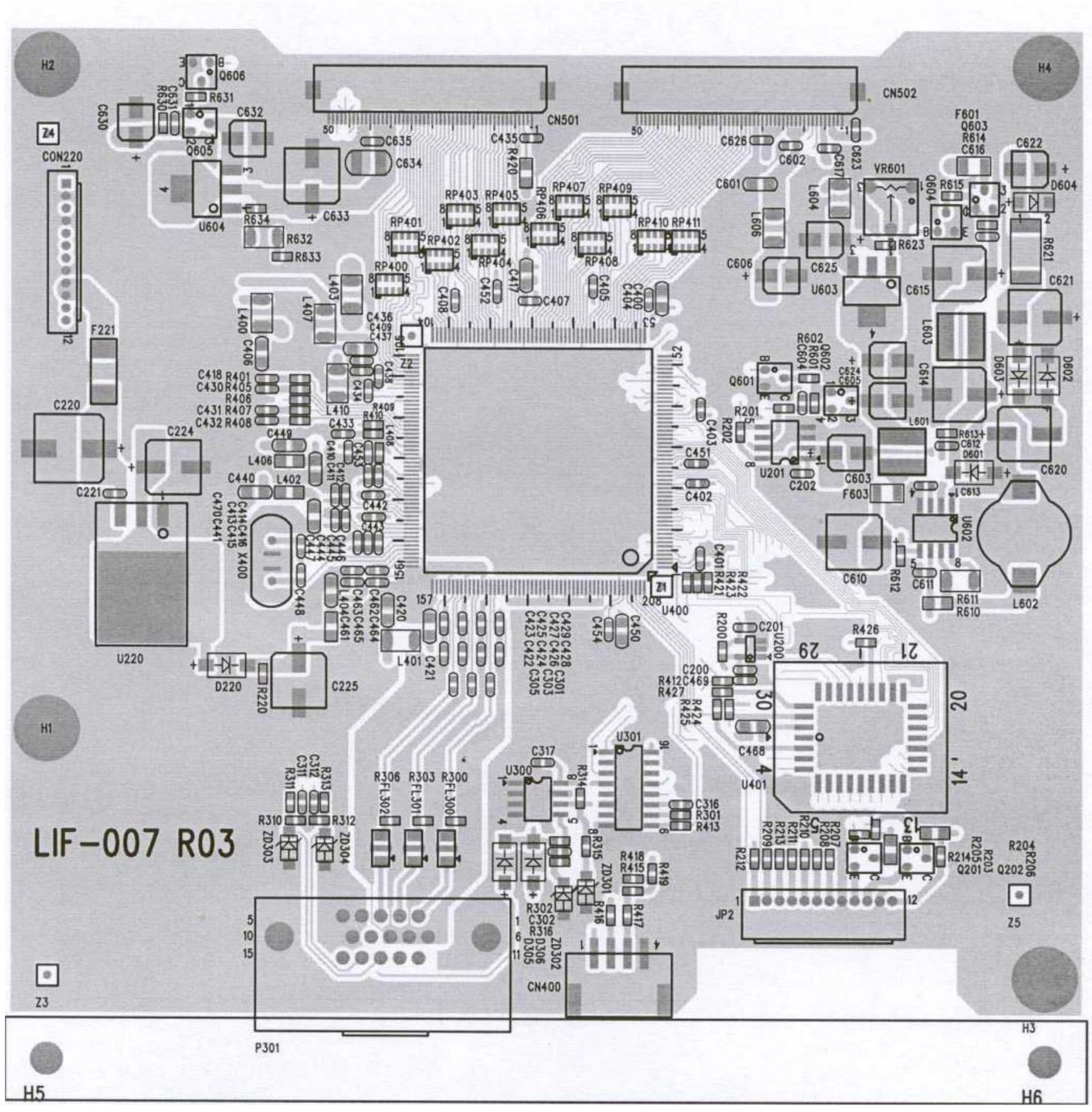
Title	7.1 SOUND AMP	
Size A3	Document Number E91001	Rev A
Date: Thursday, May 30, 2002	Sheet 2 of 2	

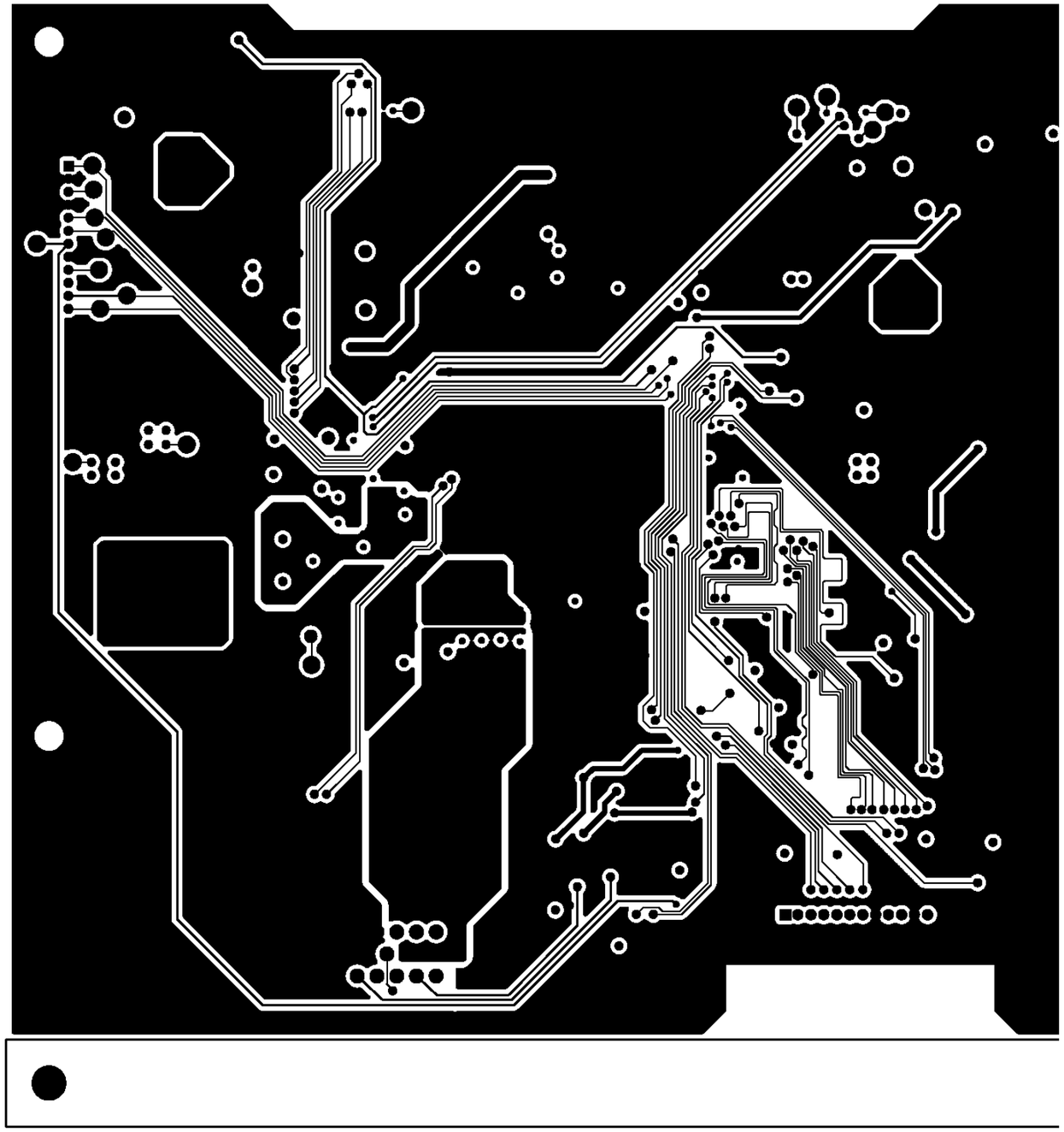


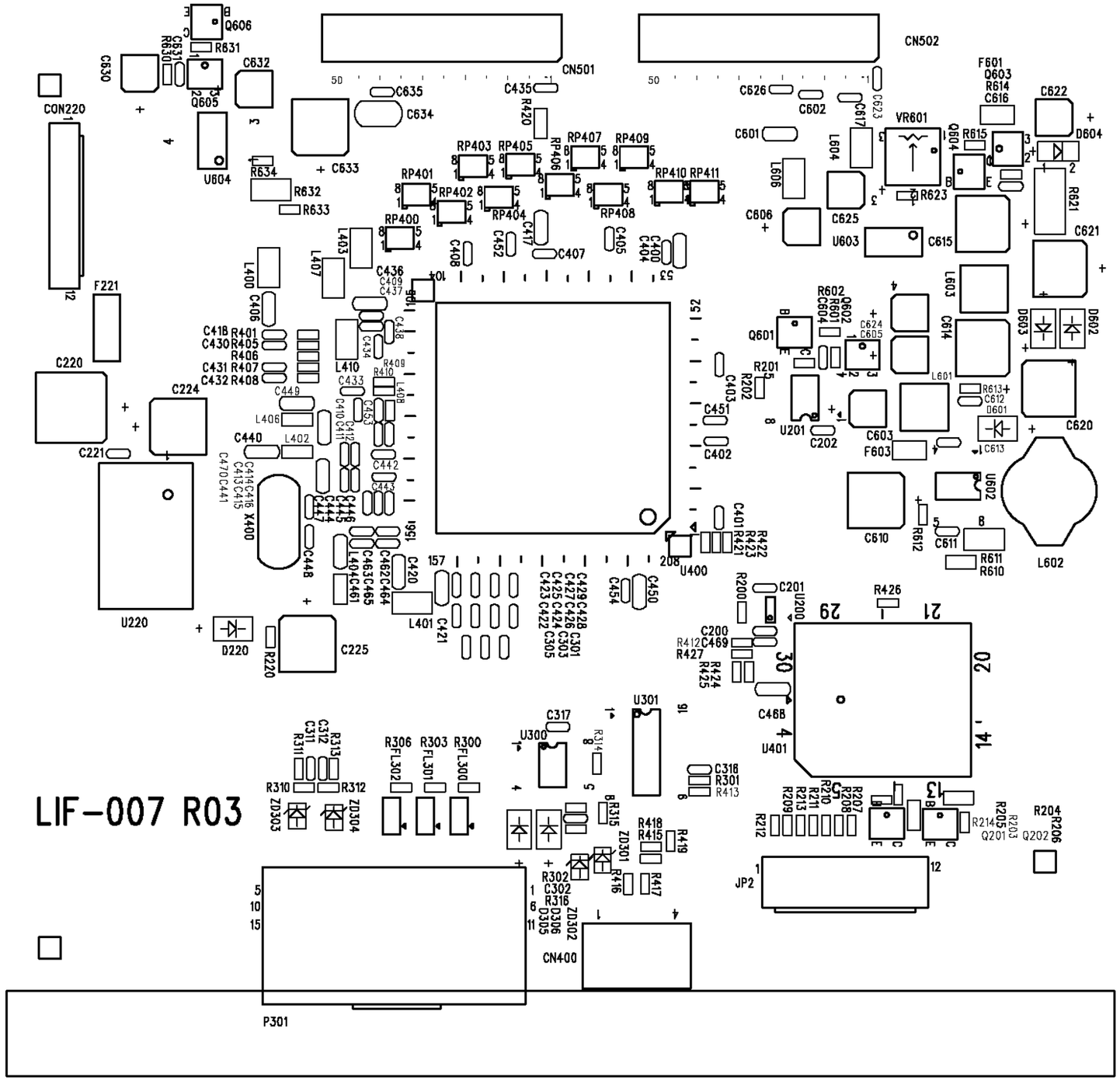
Title	VIEWSONIC KEY PAD BOARD	
Size: A3	Document Number: E91001	Rev: R01
Date: Tuesday, May 07, 2002	Sheet 1 of 1	


P1
S-5B-PH-SM3-TB
F1
3216FF-3A
L1
4.7UH
VIN
+C1
22uF/20V
C31
0.1U/25V
R27
1M
R25
0
T1
FDK (T-1032S)
C3
4.7U/16V
P2
SM02(8.0)B-BHS-1
C5
18P/3KV
C6
0.022U
C55
3300P
D21
BAV99
D6
5.6V
R13
10K
R7 10K
R12 430K
I1 OZ960
C9 0.68U
R16 10K
C8 0.01U
C10 0.47U/16V
R22 22
C21 0.047U/16V
C7 220P
R11 56K
C13 6800P
C16 0.1U
C15 0.1U
C27 0.047U/16V
R18 22
CTIMR
OVP
ENA
SST
VDDA
GNDA
REF
RT1
FB
CMP
NDRVB
PDRVA
CT
RT
PowerGND
LCT
DIM
LPWM
PDRVC
NDRVD
D9
RLS4148
R8
680 1%
OP1
D20
BAV99
FB
R10
402
I2
TPC8401
S1
G1
S2
G2
D1
D1
D2
D2
R5
10K
R2
100
Q1
2N3904
+5V
D1
5.6V
C4
2.2U/16V
R3
100K
R6
22
C11
2.2U/16V
C20
1500P
C19
0.015U
R1 140K
R4
36K 1%
R19
27K
D36
RLS4148
C54
R29
51K
R31
10K
R15
100K
Q3
2N7002
Q4
2N7002
Q5
2N7002
D3
RLS4148
D4
RLS4148
OP1
OP2
R20
1M
C25
0.1U
R21
1M
C26
0.1U
Q6
2N7002
R24
510K
VIN
D8
5.6V
R14
10K
I3
TPC8401
T2
FDK (T-1032S)
C14
4.7U/16V
P3
SM02(8.0)B-BHS-1
C17
18P/3KV
C18
0.022U
C56
3300P
D23
BAV99
D10
RLS4148
R9
680 1%
OP2
D22
BAV99
R17
402
PWB-0420
TIV-092B Inverter

12. PCB LAYOUT






LIF-007 R03
CN501
CN502
CN400
P301
JP2
U220
U400
U401
U602
L602
X400
VR601
F601
F221
F603
CON220
Q606
Q605
Q604
Q601
Q603
Q201
Q202
U604
U603
U201
U300
U301
D604
D603
D602
D601
D220
D613
C630
C631
C632
C633
C634
C635
C602
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C462
C463
C464
C465
C469
C46B
C317
C318
R602
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C470
C471
R401
R405
R406
R407
R408
R409
R410
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R421
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R211
R212
R213
R214
C200
C201
C202
C603
C604
C605
R301
R302
R303
R306
R310
R311
R312
R313
R314
R315
R316
C301
C302
C303
C305
C306
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C311
C312
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C314
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C316
C317
C318
ZD301
ZD302
ZD303
ZD304
FL300
FL301
FL302
D305
D306
R200
R201
R202
R203
R204
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R206
R207
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R209
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R212
R213
R214
C200
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C202
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R621
R620
L601
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L606
D601
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D603
D604
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U603
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U200
U301
U300
U401
U400
U602
L602
VR601
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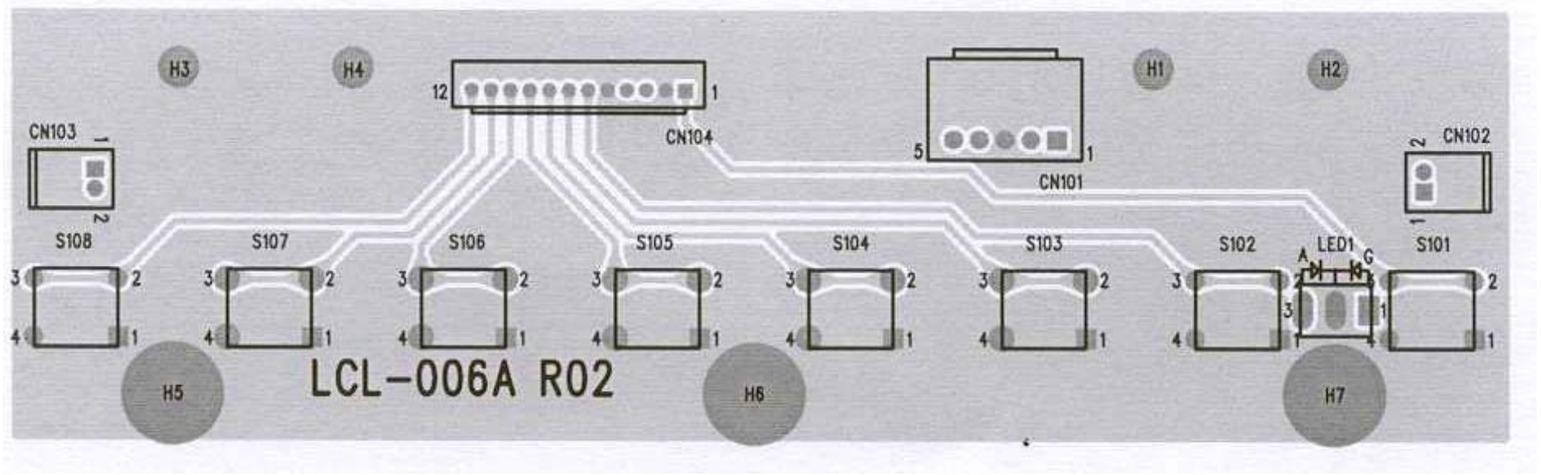
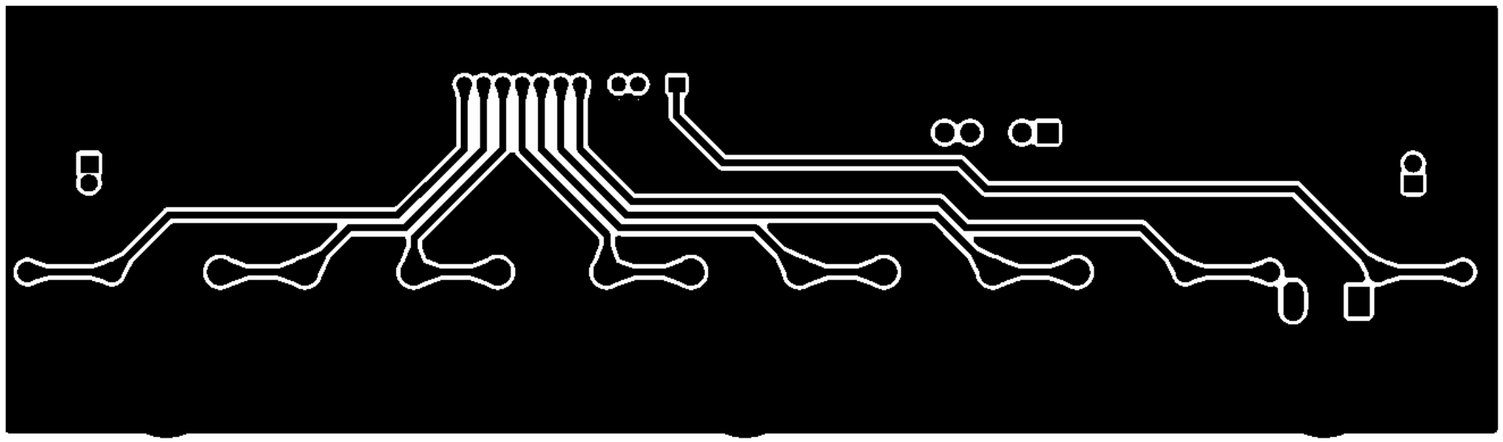
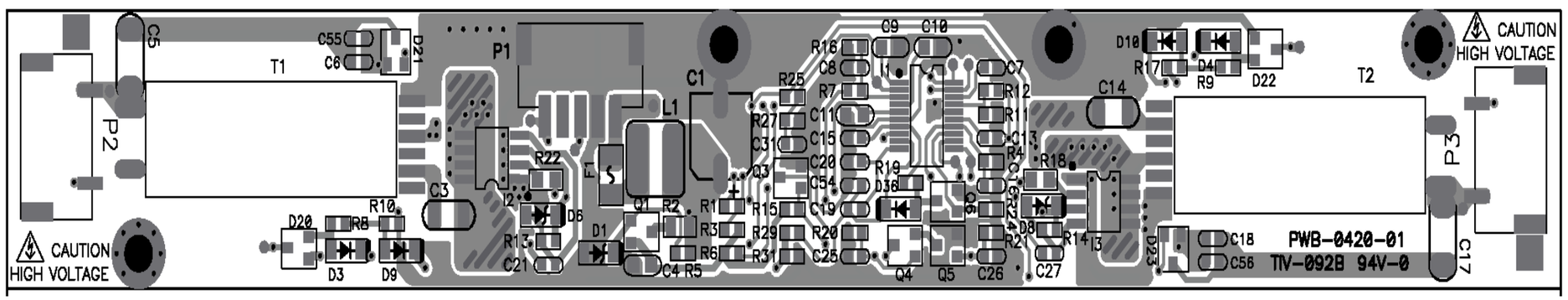
F603
Q601
Q602
Q603
Q604
Q201
Q202
JP2
P301
CN400
CN501
CN502


H3
H4
H1
H2
12
1
CN104
CN103
1
2
5
1
CN101
2
CN102
1
S108
S107
S106
S105
S104
S103
S102
LED1
A
G
S101
LCL-006A R02
H5
H6
H7




CAUTION
HIGH VOLTAGE
CAUTION
HIGH VOLTAGE
PWB-0420-01
TIV-092B 94V-0
T1
T2
P1
P2
P3
C1
L1
C3
C5
C6
C9
C10
C14
C17
C18
C21
C26
C27
C55
C56
D1
D3
D4
D6
D8
D9
D10
D20
D21
D22
D23
Q1
Q3
Q4
Q5
R1
R2
R3
R4
R5
R6
R7
R8
R9
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R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R25
R27
R29
R31
C4
C7
C8
C11
C13
C15
C19
C20
C25
C31
C54
D36
I1
I2
I3
E1